

RECEIVED

JAN 12 3 13 PM '00

POSTAL RATE COMMISSION
OFFICE OF THE SECRETARY

USPS-T-6

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

POSTAL RATE AND FEE CHANGES, 2000

Docket No. R2000-1

DIRECT TESTIMONY
OF
GEORGE S. TOLLEY
ON BEHALF OF
UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

AUTOBIOGRAPHICAL SKETCH	1
PURPOSE AND SCOPE OF TESTIMONY	3
SUMMARY	4
I. INTRODUCTION	9
A. Trends in Mail Volume	9
B. Approach to Forecasting Used in This Testimony	11
1. Forecast Model Based on Understanding Past Volume Behavior	11
2. Use of Econometric Analysis	12
3. Measurement of Important Variables	14
a. Postal Prices	14
b. Population	16
c. Income	16
d. Additional Variables	18
4. Non-Econometric Analysis	19
5. New Features Since R97-1	20
C. Guide to Testimony and Supporting Documentation	21
II. FIRST-CLASS MAIL	25
A. General Characteristics	25
1. First-Class Mail as a Means of Communication	25
2. First-Class Mail Substreams	25
3. Changes Since 1987	27
4. Organization of the Remainder of Chapter	29
B. First-Class Letters	30
1. Definition	30
a. Total Letters	30
b. Single-Piece Letters	32
c. Workshared Letters	32
C. Single-Piece Letters	34
1. Factors Affecting Volume of Single-Piece Letters	34
a. Own Price	36
b. Cross-Prices	37
c. Income	38
d. Adult Population	38
e. MC95-1 Rule Changes	39
f. R97-1 Rule Changes	39
g. Other Factors	40
i. Declining User Costs	40
ii. Electronic Diversion	43
iii. Decline in Mail Sent by Households	56

2. Volume Forecasts for Single Piece First-Class Letters	57
a. Overview of Forecast Methodology	57
b. Before-Rates Forecast	58
c. After-Rates Forecast	59
D. Workshared Letters	60
1. Factors Affecting Volume of Workshared Letters	60
a. Own-Price	60
b. Cross-Prices	60
c. Income	61
d. Adult Population	62
e. MC95-1 Rule Change	62
f. Other Factors	63
i. Declining User Costs	63
ii. Electronic Diversion	63
iii. First-Class Advertising	64
iv. Credit Card Mailings	64
2. Volume Forecasts for Total Workshared Letters	66
a. Before-Rates	66
b. After-Rates	66
3. Volume Forecasts for Nonautomated Presort Letters	67
4. Volume Forecasts for Automated Letters	67
E. Stamped cards	67
1. Definition	67
2. Volume History	67
3. Factors Affecting Volume	69
a. Own Price	69
b. Income	69
c. Adult Population	69
d. Other Factors	70
4. Volume Forecasts	71
F. Private Cards	71
1. Definition	71
2. Volume History	72
a. Total Volume of Private Cards	72
b. Volumes of Single Piece and Workshared Cards	72
3. Factors Affecting Volume	74
a. Own Price	74
b. Cross Price	75
c. Income	75
d. Adult Population	75
e. Z-variable	75
f. Other Factors	76

4. Volume Forecast	77
a. Total Private Cards	77
b. Single Piece Private Cards	78
c. Total Workshared Cards	79
d. Presorted and Automated Private Cards	80
III. MAILGRAMS	81
A. Characteristics	81
B. Volume History	81
C. Factors Affecting Volume	81
a. Adult Population	81
b. Other Factors	83
D. Volume Forecast	83
IV. Periodicals	84
A. General Characteristics	84
1. Periodicals as Source of Information	84
2. Importance of Periodicals	85
3. Rate Structure of Periodicals	85
a. In-County vs. Outside-County Rates	85
b. Further Pricing Classifications	85
B. Within-County Mail	86
1. Definition	86
2. Volume History	86
3. Factors Affecting Volume	88
a. Own Price	88
b. Income	88
c. Adult Population	88
d. Other Factors	88
4. Volume Forecast	90
C. Nonprofit Mail	91
1. Definition	91
2. Volume History	92
3. Factors Affecting Volume	94
a. Own Price	94
b. Income	94
c. Adult Population	95
d. Other Factors	95
4. Volume Forecast	96
D. Classroom Mail	97
1. Definition	97
2. Volume History	97

3. Factors Affecting Volume	97
a. Own Price	97
b. Income	99
c. Adult Population	99
d. Other Factors	99
4. Volume Forecast	100
E. Regular Rate	100
1. Definition	100
2. Volume History	101
3. Factors Affecting Volume	101
a. Own price	101
b. Income	101
c. Wholesale Price of Pulp and Paper	103
d. Adult Population	104
e. Other Factors	104
4. Volume Forecast	105
V. STANDARD A MAIL	107
A. General Characteristics	107
1. Description of Standard A Mail	107
2. Importance of Standard A Mail	107
B. Standard A Regular	108
1. Definition	108
2. Volume History	109
a. Total Volume	109
b. Nonautomated and Automated Volumes	109
3. Factors Affecting Volume	111
a. Own Price	111
b. Cross Price	112
c. Consumption	112
d. Transitory Income	112
e. Price of Newspaper Advertising	113
f. Price of Computers	113
g. Adult Population	114
h. MC95-1 Rule Changes	114
i. R97-1 Rate Cross-Over	114
j. Other Factors	115
4. Volume Forecast	127
a. Total Volume	127
b. Forecasts of Nonautomated Mail	127
c. Forecasts of Automated Mail	127
C. Enhanced Carrier Route	128
1. Definition	128
2. Volume History	128

3. Factors Affecting Standard A ECR Volume	129
a. Own price	129
b. Consumption	129
c. Transitory Income	129
d. Price of Newspaper Advertising	131
e. Adult Population	131
f. MC95-1 Rule Changes	131
g. R97-1 Rate Cross-Over	131
h. Other Factors	132
4. Volume Forecast	134
a. Total Volume	134
b. Forecasts of Nonautomated Mail	135
c. Forecasts of Automated Mail	135
E. Standard A Nonprofit Mail	135
1. Definition	135
2. Volume History	135
a. Total Volume	135
b. Nonautomated and Automated Volumes	137
3. Factors Affecting Volume	138
a. Own Price	138
b. Consumption	138
c. Adult Population	138
d. Fall Election Year	138
e. Spring Election Year	139
f. Other Factors	139
4. Volume Forecast	143
a. Total Standard A Nonprofit Volume	143
b. Forecasts of Nonautomated Volume	144
c. Forecasts of Automated Volume	144
F. Standard A Nonprofit ECR Mail	145
1. Definition	145
2. Volume History	145
3. Factors Affecting Volume	145
a. Own price	145
b. Consumption	147
c. Adult Population	147
d. Fall Election Year	147
e. Spring Election Year	147
g. Other Factors	147
4. Volume Forecast	148
a. Total Standard A Nonprofit ECR Volume	148
b. Forecasts of Nonautomated Volume	149
c. Forecasts of Automated Volume	149

VI. STANDARD B MAIL	150
A. General Characteristics	150
1. Standard B Mail as an Inexpensive Alternative	150
2. Standard B Rates and Volume	150
B. Parcel Post Mail	151
1. Definition	151
2. Volume History	152
a. Total Parcel Post Volume	152
b. Inter-BMC, Intra-BMC, and DBMC Parcel Post Volumes	152
3. Factors Affecting Volume	154
a. Own-Price	154
b. Cross-Prices	154
c. Retail Sales	155
d. Adult Population	156
e. UPS Man-Days Lost to Strike	156
f. Other Factors	156
i. Competition from Other Package Delivery Firms	156
ii. Just-in-time Production Methods	158
iii. Growth of Mail Order	160
iv. Internet and Other New Media Sales	160
v. TV Shopping Networks	163
vi. Zoneskipping	163
4. Volume Forecast	163
a. Separate Category Forecasts	163
b. Volume Forecast for Inter-BMC	165
c. Volume Forecast for Intra-BMC	165
d. Volume Forecast for DBMC	166
C. Standard B Bound Printed Matter	167
1. Definition	167
2. Volume History	167
3. Factors Affecting Volume	168
a. Own-Price	168
b. Income	168
c. Adult Population	168
d. Z-Variable	168
e. Sears Mailing Change	170
f. 1998q1 Dummy Variable	170
g. Other Factors	171
4. Volume Forecast	172
D. Standard B Special Rate Mail	172
1. Definition	172
2. Volume Changes	173

3. Factors Affecting Volume	173
a. Prices	173
b. Income	173
c. Adult Population	175
d. Other Factors	175
4. Volume Forecast	176
E. Standard B Library Rate	176
1. Definition	176
2. Volume History	177
3. Factors Affecting Volume	177
a. Price	177
b. Income	179
c. Adult Population	179
d. Other Factors	179
4. Volume Forecast	180
VII. POSTAL PENALTY AND FREE-FOR-THE-BLIND MAIL	181
A. Postal Penalty	181
1. Definition	181
2. Volume History	181
3. Factors Affecting Volume	181
a. Adult Population	181
b. Other Factors	181
4. Volume Forecast	183
B. Free-for-the-Blind	184
1. Definition	184
2. Volume History	184
3. Factors Affecting Volume	184
a. Adult Population	184
b. Other Factors	184
4. Volume Forecast	186
III. SPECIAL SERVICES	187
A. General Characteristics	187
B. Registry	187
1. Definition	187
2. Volume History	188
3. Factors Affecting Volume	188
a. Price	188
b. Income	188
c. Adult Population	188
d. Other Factors	188
4. Volume Forecast	190
C. Insured	191
1. Definition	191
2. Volume History	191

3. Factors Affecting Volume	193
a. Price	193
b. Income	193
c. Parcel Post Volume	193
d. Adult Population	193
e. MC96-3	193
f. Other Factors	194
4. Volume Forecast	195
D. Certified	195
1. Definition	195
2. Volume History	196
3. Factors Affecting Volume	196
a. Price	196
b. Income	196
c. Adult Population	196
d. Other Factors	198
4. Volume Forecast	199
E. Collect-on-Delivery	199
1. Definition	199
2. Volume History	200
3. Factors Affecting Volume	200
a. Price	200
b. Income	200
c. Adult Population	200
d. Other Factors	200
4. Volume Forecast	202
F. Return Receipts	203
1. Definition	203
2. Volume History	203
3. Factors Affecting Volume	203
a. Own-Price	203
b. Income	205
c. Certified Mail Volume	205
d. Adult Population	206
e. Dummy for 1995Q2	206
f. Other Factors	206
4. Volume Forecast	206
G. Money Orders	207
1. Definition	207
2. Volume History	207
3. Factors Affecting Volume	209
a. Price	209
b. Income	209
c. Adult Population	209
d. Other Factors	209
4. Volume Forecast	211

TECHNICAL APPENDIX: FORECAST MODEL

T USPS-6A: QUARTERLY AND GOVERNMENT YEAR VOLUME FORECASTS

DIRECT TESTIMONY
OF
GEORGE S. TOLLEY

AUTOBIOGRAPHICAL SKETCH

1
2 My name is George S. Tolley. I am Professor of Economics and formerly Director
3 of the Center for Urban Studies at the University of Chicago. I am Honorary Editor of
4 the professional journal Resource and Energy Economics. I have been named as a
5 Fellow of the American Association for the Advancement of Science. Formerly I was a
6 member of the Energy Engineering Board of the National Research Council of the
7 National Academy of Sciences. I am also President of RCF, Inc., an independent firm
8 located in Chicago, Illinois, specializing in economic and econometric analyses for
9 policy uses.

10 I received a Bachelor of Arts degree in Economics from American University in
11 1947, and an M.A. and Ph.D. in Economics from the University of Chicago in 1950 and
12 1955, respectively.

13 I was an assistant professor at the University of Chicago from 1950 to 1955 and
14 have occupied my present position at the University since 1966. I was an associate
15 professor and then a professor of economics at North Carolina State University from
16 1955 to 1966. I was a visiting professor at Purdue University in 1970, and a visiting
17 professor in 1962 and visiting scholar in 1971 at the University of California at Berkeley.

18 I was director of the Economic Development Division, Economic Research
19 Service, United States Department of Agriculture, from 1965 to 1966 and was Deputy
20 Assistant Secretary and director of the Office of Tax Analysis in the Department of
21 Treasury from 1974 to 1975. In these positions I directed staffs whose primary function
22 was to conduct research and analysis for policy purposes. My other duties in
23 government have included advising Cabinet and White House officials, participating in

1 the legislative proposal process, and writing testimony for and participating in
2 congressional hearings.

3 My published works include 16 books and over 40 articles. Among the journal
4 articles, four were published in Econometrica, three each in the Journal of Political
5 Economy and the American Economic Review, and one in the Quarterly Journal of
6 Economics.

7 I have participated in the preparation of 9 technical bulletins, over 70 chapters
8 contributed to books, conference proceedings, and other research studies, and have
9 written 11 book reviews and made a number of published remarks as a professional
10 meeting discussant.

11 As a member of the faculty at the University of Chicago, I teach graduate
12 economics courses, and chair and attend workshops and seminars dealing with
13 economics and econometrics.

14 I have served as a consultant on economic and agricultural policy in Egypt, Iran,
15 Israel, Korea, Panama, Puerto Rico, Thailand and Venezuela, and I have performed
16 analyses of mortgage interest deductions, accelerated depreciation and housing
17 instability for the Department of Housing and Urban Development and of capital
18 taxation for the Treasury Department. I served as a consultant on econometric and
19 simulation techniques in work on postal prices and competition and demand component
20 markets of mailstreams carried out for the U.S. Postal Service. During 1989, I served
21 as a consultant to Australia Post on mail volume forecast methodology and as a
22 consultant to the World Bank on housing policy for China. I have testified on behalf of
23 the Postal Service as the volume witness in Docket Nos. R80-1, R84-1, R87-1, R90-1,
24 R94-1, MC95-1, MC96-2, and R97-1.

1 **PURPOSE AND SCOPE OF TESTIMONY**

2 The major purpose of this testimony is to present forecasts of volumes for the
3 major categories of mail service offered by the United States Postal Service. Two sets
4 of forecasts are presented:

- 5 (a) Mail volumes that will occur in the Test Year if the current Postal Service rate
6 schedules remain in effect, referred to as the "before-rates" forecast; and
7 (b) Mail volumes that will occur in the Test Year if the rates proposed by the
8 Postal Service in this proceeding are adopted, referred to as the "after-rates"
9 forecast.

10 The method used in forecasting mail volumes is to project changes in mail
11 volumes between a Base Year and a Test Year. The Base Year used in the forecasts
12 is Postal Fiscal Year (PFY) 1999, which ran from September 12, 1998 to September
13 10, 1999. The Test Year is Government Fiscal Year (GFY) 2001, which begins October
14 1, 2000 and ends September 30, 2001.

15 In the testimony, recent volume experience is reviewed, and factors determining
16 mail volumes which are taken into account in making the forecasts are discussed. A
17 detailed explanation of the econometric analyses used in making the volume forecasts
18 is provided in the direct testimony of Thomas Thress (USPS-T-7). Additional
19 information that is considered in making volume forecasts is discussed where
20 appropriate below.

1

2

9

10

11

12

13

14

15

16

17

TABLE 1
VOLUME PROJECTIONS
(Million Pieces)

<u>Category of Mail or Service</u>	<u>Base Year</u>	<u>Test Year</u>	<u>Test Year</u>
	<u>PFY 1999</u>	<u>Before-Rates</u>	<u>After-Rates</u>
		<u>GFY 2001</u>	<u>GFY 2001</u>
FIRST-CLASS MAIL			
First-Class Letters & Flats	96,097.461	100,261.726	99,857.394
(Single Piece)	53,412.621	53,213.828	52,877.658
(Workshared)	42,684.840	47,047.898	46,979.736
(Nonautomated Presort)	4,205.094	2,930.521	2,586.288
(Automated)	38,479.747	44,117.377	44,393.448
First-Class Cards	5,267.824	5,584.931	5,440.951
Stamped Cards	420.287	445.823	415.873
Private Cards	4,847.537	5,139.108	5,025.078
(Single Piece)	2,414.013	2,405.027	2,354.910
(Workshared)	2,433.524	2,734.081	2,670.168
(Nonautomated Presort)	515.419	400.483	383.715
(Automated)	1,918.105	2,333.598	2,286.453
TOTAL FIRST-CLASS MAIL	101,365.286	105,846.657	105,298.345
Priority Mail	1,187.813	1,331.105	1,226.160
Express Mail	68.366	71.641	72.301
Mailgrams	4.306	3.340	3.340
PERIODICALS			
Within County	894.488	872.194	862.061
Nonprofit	2,136.552	2,095.809	2,052.208
Classroom	59.816	56.415	55.089
Regular Rate	7,205.661	7,410.104	7,351.808
TOTAL PERIODICALS	10,296.517	10,434.523	10,321.166
STANDARD A MAIL			
Regular Rate Bulk	71,259.881	76,414.291	73,826.867
Regular	38,490.810	42,783.773	40,998.656
(Nonautomated)	6,323.525	5,520.725	5,304.047
(Automated)	32,167.285	37,263.048	35,694.609
Enhanced Carrier Route	32,769.071	33,630.517	32,828.211
(Nonautomated)	30,590.778	31,739.292	30,976.309
(Automated)	2,178.293	1,891.225	1,851.903
Nonprofit Rate Bulk	13,874.650	14,418.001	14,277.455
Nonprofit	10,933.949	11,510.795	11,425.579
(Nonautomated)	3,486.325	2,923.601	3,040.715
(Automated)	7,447.624	8,587.194	8,384.865
Nonprofit ECR	2,940.701	2,907.206	2,851.875
(Nonautomated)	2,589.777	2,565.620	2,514.220
(Automated)	350.924	341.586	337.655
TOTAL STANDARD A	85,134.531	90,832.291	88,104.322

TABLE 1
(Continued)
VOLUME PROJECTIONS
(Million Pieces)

<u>Category of Mail or Service</u>	<u>Base Year</u>	<u>Test Year</u>	<u>Test Year</u>
	<u>PFY 1999</u>	<u>Before-Rates</u>	<u>After-Rates</u>
		<u>GFY 2001</u>	<u>GFY 2001</u>
STANDARD B MAIL			
Parcel Post	326.021	378.447	374.096
(Inter-BMC)	62.263	51.620	47.638
(Intra-BMC)	35.863	28.817	26.254
(Destination Entry)	227.895	298.009	300.204
Bound Printed Matter	488.627	541.976	524.743
Special Rate	200.243	208.687	205.789
Library Rate	28.010	29.009	28.432
TOTAL STANDARD B	1,042.900	1,158.118	1,133.060
Postal Penalty	381.981	348.543	348.543
Free-for-the-Blind	52.718	56.675	56.675
TOTAL DOMESTIC MAIL	199,534.419	210,082.894	206,563.911
SPECIAL SERVICES			
Registry	13.768	11.563	10.966
Insurance	48.054	45.610	44.680
Certified	267.068	295.742	274.934
Collect-on-Delivery	4.026	3.576	3.544
Return Receipts	228.610	252.559	220.088
Money Orders	219.059	234.993	226.435
TOTAL SPECIAL SERV.	780.585	844.043	780.646

As shown in Table 1, total domestic mail volume is projected to increase from 199.5 billion pieces in the Base Year to 210.1 billion pieces in the before-rates situation in the Test Year. The increase is 5.3 percent over a period of two years, corresponding to an annual growth rate of about 2.6 percent.¹ The projection for domestic mail volume in the after-rates situation is 206.6 billion pieces, which is a 3.5 percent increase over the same period, corresponding to an annual growth rate of about 1.7 percent.

¹ This slightly overstates the volume growth between the Base Year and the Test Year because the Base Year has 364 days and the Test Year has 365 days.

1 For the six special services covered in the testimony, the projection is for an
2 increase from 780.6 million transactions in the Base Year to 844.0 million transactions
3 before-rates in the Test Year, an increase of 8.1 percent over the two-year period. The
4 after-rates projection for special services is 780.6 million transactions, essentially the
5 same as in the Base Year.

6 The basic volume forecasting approach consists of projecting the volume in the
7 Test Year through use of a series of projection factor multipliers. Each projection factor
8 considers the impact of a particular variable on volume from the Base Year to the Test
9 Year. A first factor considered is adult population. Increases in mail volume are closely
10 tied to increases in adult population and, in fact, volume forecast projections are made
11 on the basis of pieces per adult. Thus, the projected percentage increase in adult
12 population increases the forecasted mail volume of all categories by an equal
13 percentage amount. A 1.85 percent increase in adult population is projected to occur
14 between the Base Year and Test Year.

15 A second variable considered in projecting mail volumes is the price paid by the
16 mailer. The effect of price on volume is estimated as a response to price in real terms,
17 i.e., nominal price deflated by an index of the general level of prices.

18 Rather than occurring immediately, response to price occurs over a period of time.
19 A change in real or deflated price is estimated to lead to a volume response in the
20 quarter in which the price change occurs and in subsequent quarters. The volume
21 responses to price are expressed as price elasticities (where price elasticity is the
22 percent change in volume resulting from a one percent change in real price). Effects of
23 deflated price changes on the Test Year volume forecast are obtained by applying
24 estimated price elasticities to percentage changes in real prices between the Base Year
25 and the Test Year. The before-rates schedule assumes that the current rate schedule

1 remains in place, in which case real postal rates decline between the Base Year and
2 the Test Year. The after-rates schedule assumes that the rates proposed by the Postal
3 Service in this case are adopted.

4 A third factor considered is income. The effect of long-term growth in real income
5 per adult on mail volume is projected by combining the long-term income elasticity of
6 demand (the percentage increase in volume resulting from a one percent increase in
7 real long-term income per adult) for each mail category with the projected percentage
8 increase in real long-term income. The effect of short-term income changes due to
9 business fluctuations is projected by combining the short-term income elasticity with the
10 projected change in short-term income between the Base Year and the Test Year.

11 Volumes for some categories of mail are affected by the price of substitute mail
12 categories. As a result, the price of the substitute, or cross-price, is a fourth factor
13 considered for selected categories of mail. Cross-price elasticity of demand (the
14 percentage change in volume for a category resulting from a one percent change in
15 price for a substitute category) is used to take account of the effects of changes in
16 prices for substitute categories.

17 Additional specific factors also affect demand for some mail categories. For each
18 of these factors, an elasticity is estimated and used in connection with the projected
19 percentage change for that factor. Seasonal multipliers are included to provide the
20 seasonal pattern for the volume forecasts. Finally, for a few mail categories, very
21 recent impacts on volume are taken into account through inclusion of a net trend factor.

22 The text of this testimony presents a discussion of factors that affect the demand
23 for individual mail categories and presents the resulting volume projections. The
24 Technical Appendix and workpapers as well as the direct testimony of Thomas Thress
25 (USPS-T-7) provide a detailed description of the procedures used.

I. INTRODUCTION

A. Trends in Mail Volume

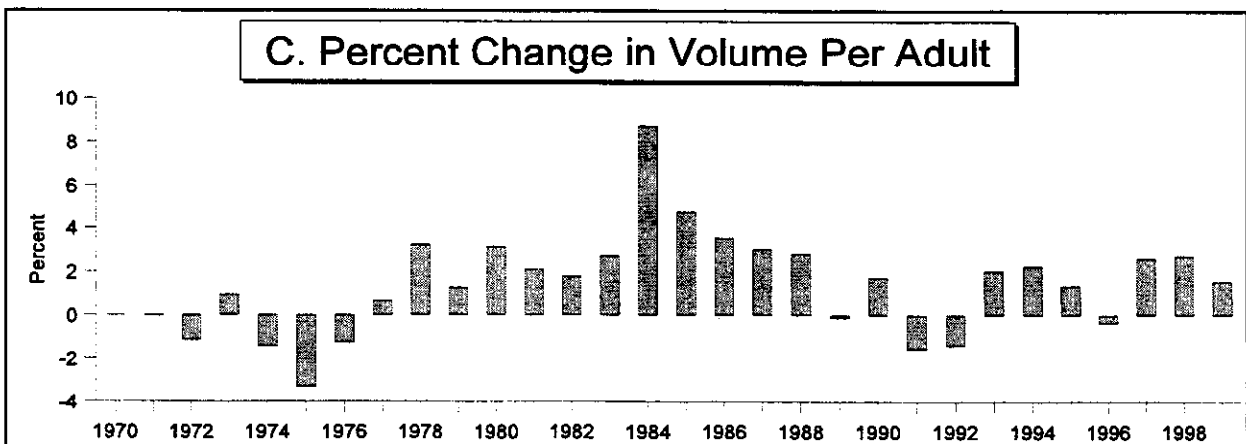
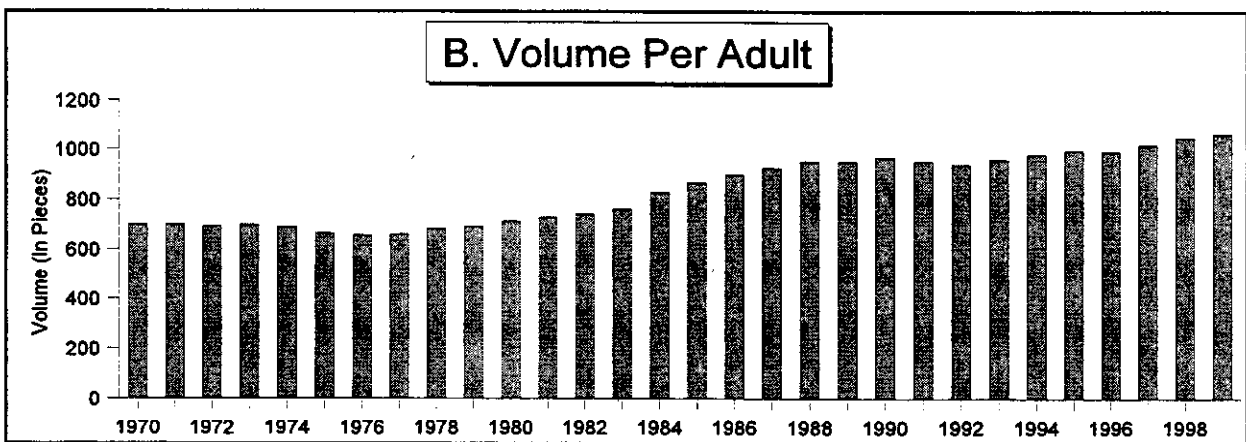
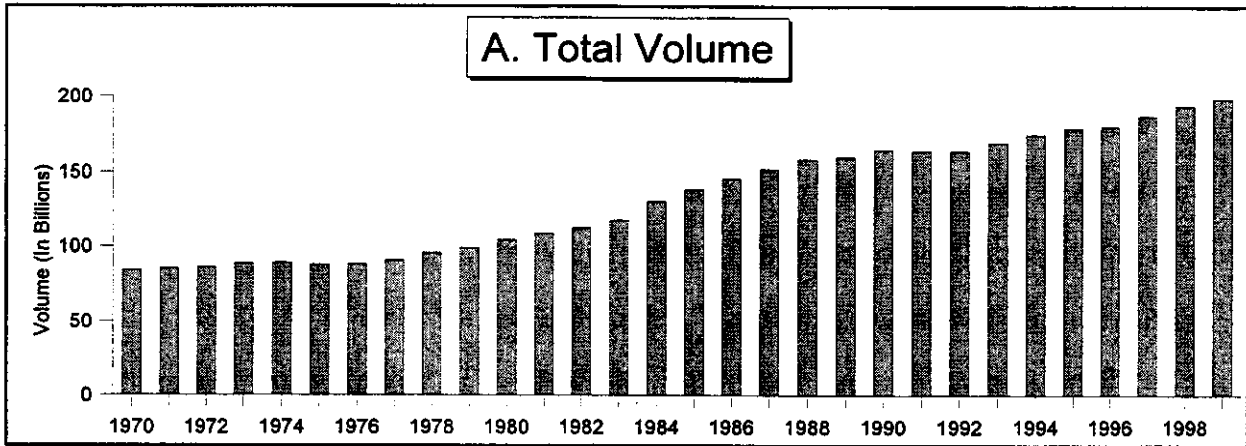
The total volume of domestic mail handled by the U.S. Postal Service reached 199.5 billion pieces in Postal Year 1999, 3.0 percent higher than the 193.6 billion pieces in the previous year. New yearly highs have been typical for mail volume. Since the Postal Reorganization Act of 1970, when volume was 84.3 billion, total mail volume has grown in every year except 1975, 1991 and 1992.

Increasing population explains much of the mail volume growth. Adults are generally responsible for generation of mail. The adult population as measured by persons 22 years of age or older rose 55 percent from 1970 to 1999. Population growth has been a relatively steady influence. The rate of growth of the adult population varied from about one to two percent per year.

The influence of population is separated out by comparing the top and middle charts in Figure 1. The top chart shows total mail volume from 1970 to 1999, revealing the general upward trend in mail volumes. The middle chart shows volume per adult, reflecting influences other than population. It reveals a more varied situation. Starting at 700 pieces per adult in 1970, pieces per adult dipped to 657 in 1976 and then recovered to 714 pieces by 1980. On net, then, in the 1970s mail volume increased approximately in proportion to population. In the early 1980s, mail volume growth accelerated, with pieces per adult reaching 969 in 1990, a 36 percent increase during the decade. Pieces per adult declined the next two years, but has since increased to 1,063 pieces per adult in 1999.

The lower part of Figure 1 enables a closer look by giving the yearly percentage changes in pieces per adult, derived from the middle chart. Periods of systematically different change are brought out in the lower chart. Pieces per adult declined in five of

Figure 1
Total Domestic Mail



1 the six years from 1971 to 1976. Pieces per adult increased in every year subsequent
2 from 1976 through 1990, including the large gain of 8.7 percent in 1984. After declining
3 in 1991 and 1992, total mail volume per adult has increased in six of the last seven
4 years.

5 The total mail volume experience in Figure 1 is largely reflective of the two most
6 important mail subclasses, First-Class letters and Standard A Regular mail. As will be
7 brought out later in this testimony, for these two subclasses, experience has been
8 similar in that growth for both picked up in the late 1970s and early 1980s, followed by a
9 tapering off of growth.

10 Experience has been extremely varied for the numerous other subclasses which
11 have a lesser effect on total mail volume. The testimony is concerned with the
12 underlying subclass behavior leading to the volume totals shown in Figure 1.

13 **B. Approach to Forecasting Used in This Testimony**

14 The two major tasks of the testimony are (1) to understand past volume changes
15 for each subclass with special attention to the past five years leading up to the Base
16 Year and (2) to use this understanding to make projections through the Test Year.

17 Test Year before-rates and after-rates mail volume forecasts are made by
18 multiplying the Base Year volume by a series of projection factor multipliers. Each
19 multiplier measures the impact of a projected future change from the Base Year to the
20 Test Year in a factor found to affect volume in the past.

21 **1. Forecast Model Based on Understanding Past Volume Behavior**

22 The testimony is based on the belief that past behavior of mail volumes provides
23 the most valuable source of information about what is likely to happen in the future,
24 particularly if the reasons for past volume changes can be understood and used as the
25 basis for forecasting.

1 Income and price changes, which are traditional variables used to explain
2 economic changes, are among the reasons that mail volumes change. For example, as
3 incomes rise, the demand to communicate rises in the course of fulfilling the demands
4 for growing amounts of goods and services in the economy. Prices affect mail volumes
5 in several ways. The rate charged for a piece of mail in the subclass whose volume is
6 being explained, or its own-price, acts to deter use if the price is raised. Rates charged
7 for mail that might be used as an alternative, or postal cross-prices, as illustrated by the
8 rate for a letter whose contents could be sent either by First-Class or Standard A, may
9 affect which mail subclass is used. Another type of cross-price is for nonpostal
10 alternatives, as for example United Parcel Service rates that affect usage of Parcel Post
11 mail.

12 In addition, mail volumes are influenced by considerations beyond the effects
13 measured by income and price. Mail is just one form of communication, and its volume
14 is affected by electronic communications developments. The developments are having
15 both negative and positive effects on mail volumes. Advertising mail is not an isolated
16 entity but rather is one among several advertising media which are in competition with
17 each another. The individual media are subject to changes in input costs, technology
18 and exposure effectiveness that alter their attractiveness and the competitiveness of
19 non-mail media with mail. Lifestyle and demographic changes also influence mail
20 volumes in a variety of ways

21 **2. Use of Econometric Analysis**

22 The starting point in gaining an understanding of mail volume behavior is to
23 specify regression equations attempting to explain mail volume in terms of independent
24 variables influencing volume in the past. Thus, understanding the reasons behind past
25 changes in mail volume is used to project changes in mail volume in the future. The

1 econometric work includes regressions usually estimated at the subclass level using
2 quarterly data. The econometric analysis gives estimates of the responsiveness of
3 volume to changes in the included variables, which then can be used to explain how
4 these variables can be expected to contribute to volume change in the future.

5 For example, econometric analysis indicates that in the past, a one percent
6 increase in the real price of Periodicals Regular mail has been associated with about a
7 0.15 percent decline in volume. Based on this result, the impact of future changes in
8 Periodicals Regular mail price can be projected.

9 Ideally, ordinary last squares (OLS) regression analysis of past volume would yield
10 satisfactory estimates of the elasticities needed in the volume forecasts. A complication
11 precluding this simple approach is that OLS estimates in uncorrected form in some
12 cases do not yield satisfactory estimates. There exists a high degree of inter-
13 correlation between the variables influencing mail volume. For example, postal prices
14 tend to move together rather closely so that it can be difficult to distinguish the impact
15 on volume of a change in postal own-price from the impact of a change in the price of a
16 postal cross-price. To address this kind of problem, state-of-the-art econometric
17 methods are employed to introduce procedures into the OLS estimation to obtain more
18 reliable estimates. These procedures take several forms. For example, the *Household*
19 *Diary Study*, which gives cross section data at a point in time, throws light on effects of
20 income on mail volume which can be introduced into the basic time series regressions
21 replacing unreliable income coefficients from the raw time series regressions. As
22 another example, economic theory is used to constrain the relations among estimates
23 to reasonable values.

24 In addition to complications arising from inter-correlations among included
25 independent variables, quarterly time series measures in a form useable in regressions

1 are not available for all variables affecting mail volumes. Because of limitations on data
2 useable in regressions, the specification of the econometric equations realistically
3 cannot be completely ideal. However, a great deal of other information exists on
4 factors affecting mail volumes. The approach underlying the present testimony is that
5 all information, not just that small subset of data that exist as a measured quarterly
6 variable, should be used in gaining an understanding of mail volume behavior and
7 predicting future mail volumes. Econometric and non-econometric techniques are
8 employed to introduce this type of information.

9 **3. Measurement of Important Variables**

10 **a. Postal Prices**

11 FWI Price. With regard to the measured independent variables, the price of a mail
12 subclass is measured as a fixed weight index (FWI) of the prices of the various
13 categories of the subclass. For example, the 33 cent rate commonly referred to as the
14 price of a single-piece First-Class letter is only the rate of a basic letter weighing one
15 ounce or less. Heavier letters cost more, and the FWI price of single-piece letters
16 reflects the impact of the additional cost for letters weighing more than one ounce.
17 Workshare letters, on which the mailer receives a discount for satisfying Postal Service
18 workshare requirements, pay a lower one ounce rate than single-piece letter mail. The
19 FWI price of workshared letters takes account of the different discounts used by
20 mailers, as well as the impact of the additional cost for those workshared letters which
21 exceed one ounce in weight. Similar adjustments are made for other mail categories so
22 that the FWI price represents a measure of the price actually paid by mailers.

23 User Costs. The price paid by mailers for workshared mail is not solely
24 represented by the postal rate paid. The reason is that mailers or their agents must
25 bear extra costs of performing the tasks that qualify the mailing for a discount. For

1 example, the current price of a 3-digit automated First-Class letter is 26.1 cents, but to
2 receive this discounted price, the mail must be prepared in a way that satisfies the
3 requirements for this category. The additional cost borne by mailers to satisfy
4 worksharing requirements is referred to as a user cost, and user costs are included as
5 part of the FWI price paid by mailers.

6 Inflation Adjustment. The price of sending a basic one ounce First-Class letter has
7 risen eleven times since the beginning of 1971. In May 1971, the price was increased
8 from 6 to 8 cents, where it remained for nearly three years until being raised to 10 cents
9 in March 1974. Less than two years later, in December 1975, it was raised to 13 cents.
10 Subsequent increases have occurred at approximately three-year intervals. The price
11 became 15 cents in May 1978, rising to 18 cents in March 1981 and 20 cents in
12 November 1981. The price was raised to 22 cents in February 1985, to 25 cents in April
13 1988, to 29 cents in February 1991 and to 32 cents in January 1995. The current price
14 of 33 cents for a one ounce single-piece letter has been in effect since January 1999.

15 Although the nominal price has increased substantially over the years, much of
16 this increase has paralleled the increase in the general price level over the same
17 period. Mailers can be expected to respond to real or deflated postal price, which
18 requires dividing the nominal postal prices considered so far by an index of the general
19 level of prices. Nominal postal prices are changed only intermittently, typically staying
20 constant between rate cases. On the day new rates go into effect, postal prices rise by
21 the full amount of the rate increase, and then the prices in real terms begin to fall as
22 inflation reduces the real value that must be paid to send mail. Real postal prices
23 exhibit a saw-tooth pattern, rising vertically at the time of a nominal rate increase and
24 then gradually falling from that day forward due to inflation until there is another vertical
25 rise at the time of the next rate increase. Whether real or deflated postal prices rise

1 from one rate case to another depends on whether nominal postal prices are raised by
2 more, or less, in a rate case than the rise in the general price level since the last rate
3 case.

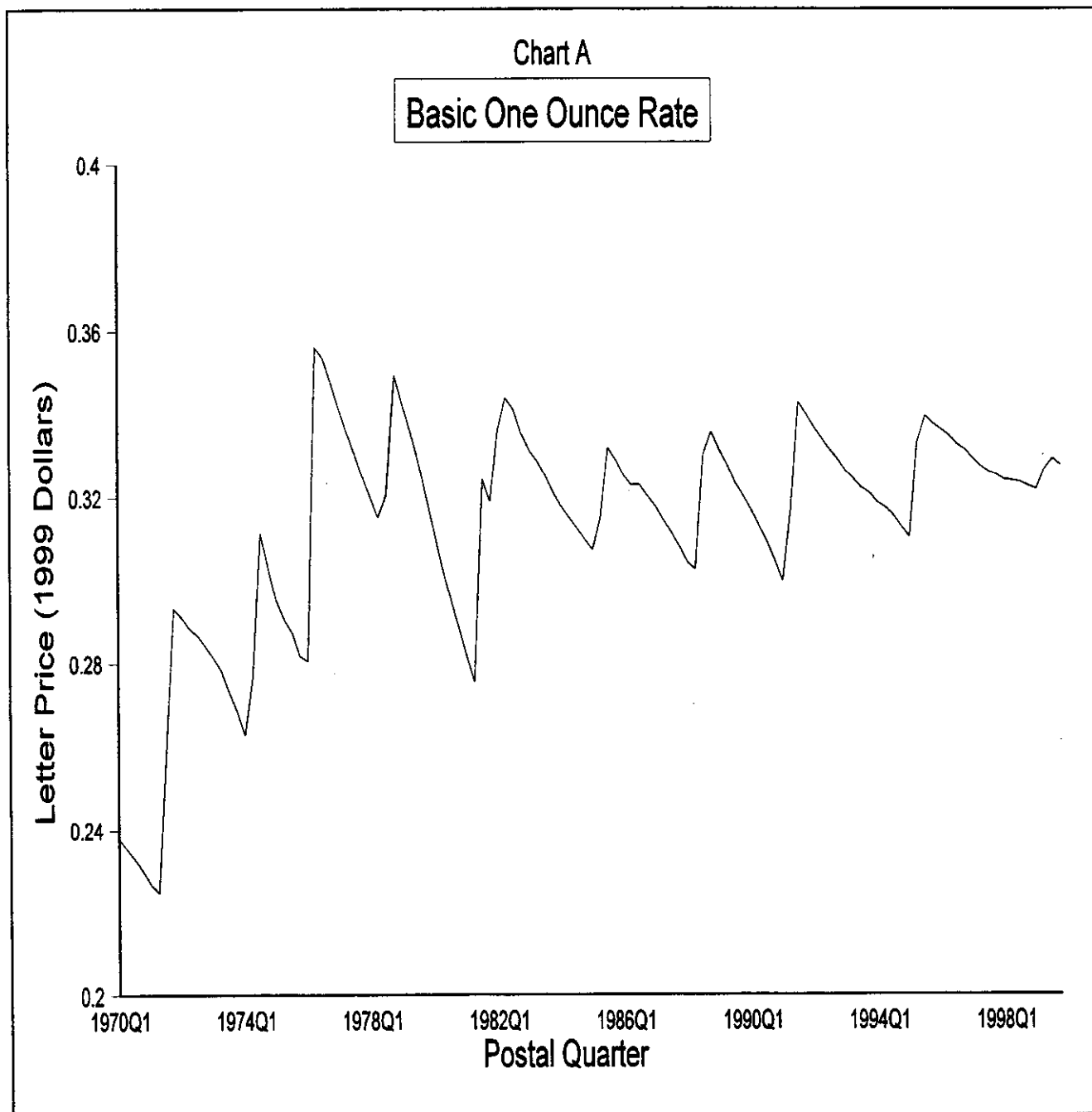
4 Chart A shows the real price for a one ounce single-piece (non-workshared) First-
5 Class letter. The real price in Chart A is measured in 1999 dollars, which means that
6 the nominal prices in earlier years are adjusted to account for changes in the general
7 price level between the earlier year and 1999. The real price exhibits a saw-toothed
8 pattern, rising following a rate case and then falling as inflation reduces the real price of
9 mail. As can be seen, over and above the saw-tooth pattern, the real price rose in the
10 first few years after the Postal Reorganization Act of 1970, reaching a peak of 35.6
11 cents (in 1999 dollars) in 1976. Real price declined until the early 1980s as the
12 increase in the general price level exceeded increases in the basic one ounce letter
13 rate. Since 1982, real price has fluctuated between 30 and 35 cents, with the upper
14 end of this range occurring immediately after rate cases.

15 **b. Population**

16 Another factor affecting mail volume is population. Since adults are generally
17 responsible for mail, the measure of population used in the econometric analysis is
18 adult population age 22 and over as reported by Data Resources Inc. (DRI). Mail
19 volumes are measured as volumes per adult so that increases in adult population lead
20 to equal percentage increases in mail volume, excluding the impact of all other
21 variables.

22 **c. Income**

23 A third factor affecting mail volume is income. For many mail subclasses, the
24 econometric impact of income is decomposed into separate effects of permanent and
25 transitory income. Permanent income is measured as an exponentially weighted



1 average of past real (inflation adjusted) disposable income, as reported by DRI.

2 Transitory changes in income associated with business cycles can also affect mail
3 volume. The transitory effects will tend to average out over time. They could, however,
4 have an effect for any specific period if the beginning and end of the period are not at
5 the same stage of the business cycle. Transitory income is measured by the Federal
6 Reserve Board Index of Capacity Utilization (UCAP), which is also reported by DRI.

7 For some mail categories, different measures related to income are used. For
8 example, Standard A mail volume, which consists of advertising mail, is found to be
9 strongly affected by consumption expenditures. Retail sales – a somewhat more
10 specific spending measure – is one of the variables used to explain changes in Parcel
11 Post volume.

12 **d. Additional Variables**

13 Other variables included in the estimation of the volume of some mail subclasses
14 include the prices of other postal products, measured as the real fixed weight index
15 price of the product, and the real price of important nonpostal alternatives, which
16 include both direct competitors (UPS) and indirect competitors (like the price of
17 newspaper advertising). The real price of complement products (products that are used
18 with the mail) are included in the regressions of some mail categories. Volume analysis
19 also takes account of changes in Postal Service rules and regulations. In addition,
20 variables accounting for the seasonal pattern of mail volumes are included.

21 Beyond direct measures of variables considered so far, econometric analysis can
22 include estimates of other influences on mail volumes, influences that do not lend
23 themselves to measurements as a single variable. As an example, technological
24 advancements that have lowered the cost of automating mail have contributed to the
25 shift of volume from single-piece to workshared letters. Direct measurement of this

1 effect is precluded by the myriad combination of factors involved and the lack of
2 consistent and complete data.

3 A similar problem arises with respect to efforts to quantify the impacts of the wide
4 ranging changes in communications that have been and still are occurring. Many of
5 these changes have occurred only in the last few years, such as the growth of E-Mail
6 and the Internet. Reliable time series data for much of this information are not available
7 for the entire sample period used in the volume demand equations. Moreover, the
8 rapidly changing nature of the technologies may preclude comparisons of data that are
9 only a few years apart. Other examples involve more gradual changes that have to do
10 with lifestyles, as in the general decline in the reading of newspapers and magazines.
11 Nonetheless, these kinds of influences can be accounted for in the econometric
12 analysis through use of trend variables designed to measure their effects on mail
13 volume. The companion testimony of Thomas Thress (USPS-T-7) provides a detailed
14 explanation of the econometric analysis of mail volumes.

15 **4. Non-Econometric Analysis**

16 In addition to information obtained from the econometric analysis, considerable
17 attention is paid to the collection of non-econometric information about mail volumes.
18 Non-econometric information may be statistical or narrative. The purpose of this non-
19 econometric research is three-fold. First, it contributes to the general understanding of
20 the mail and helps determine which variables should be included in the econometric
21 equations. Second, non-econometric evidence may provide information that helps
22 determine whether the elasticities obtained from the econometric estimation are
23 reasonable and, if not, suggest alternative approaches. Third, non-econometric
24 evidence can be introduced into the volume forecast when it has been determined that
25 recent changes warrant special consideration.

1 The impact of recent non-econometric influences on mail volume are estimated
2 through calculation of a net trend term. The net trend indicates how volume changes
3 have been different from what would be predicted by the coefficients of variables
4 included in econometric analysis. It gives an estimate of the effects of these variables
5 in the recent past. The net trend over the most recent five-year period (1994 to 1999) is
6 evaluated in light of non-econometric information. If the non-econometric information
7 indicates that the unmeasured variables have a marked effect and will continue to act in
8 the same way in the forecast period as in the past five years, the annualized net trend
9 is added as an influence to the predicted effects using the econometric variables.

10 For most mail categories, it is found that econometric considerations satisfactorily
11 account for changes in mail volumes. For these categories, analysis of non-
12 econometric factors indicates that these factors do not have enough effect to warrant
13 inclusion in the volume forecast or, in some cases, are significant but offsetting.

14 The Technical Appendix to this testimony presents a discussion of the volume
15 forecasting methodology.

16 **5. New Features Since R97-1**

17 The last general rate case, Docket No. R97-1, followed relatively soon after the
18 Postal Service's classification reform initiatives in MC95-1 and MC96-2. Due to the
19 uncertain impact of these classification changes, the econometric analysis of First-
20 Class letter volumes only used quarterly data prior to MC95-1. In the current case, all
21 the econometric equations are estimated using data through 1999q4, which was the
22 most recent quarter available at the time that the econometric analysis was performed.

23 The inclusion of recent post-classification reform data also contributes to the
24 development of forecasts for the automation categories of First-Class and Standard A

1 mail. The testimony of Thomas Thress (USPS-T-7) presents a discussion of the
2 forecasts of the automation and presort categories of First-Class and Standard A mail.

3 Another change since R97-1 is a slight modification of the treatment of the lagged
4 response of mail volumes to changes in postal prices. Whereas in the past, the lag
5 structure was constrained to include the current price and the price lagged one, two,
6 and three quarters, the present analysis allows for a shorter lag structure if the data
7 warrant.

8 Finally, the volume testimony now includes forecasts of return receipts volume and
9 no longer presents forecasts of Standard A single-piece volume because this mail
10 category no longer exists.

11 **C. Guide to Testimony and Supporting Documentation**

12 The total volume testimony submission includes the body of my testimony, the
13 companion testimony by Thomas Thress, and the Technical Appendix, Workpapers
14 and Library References that accompany our testimonies. A guide to these materials is
15 as follows.

16 Following the presentation of introductory background material, the
17 body of my testimony contains separate sections on the individual mail
18 subclasses and special services for which volume projections are made.
19 In each of these sections, the subclass is first defined, and then its
20 volume history is reviewed. Then estimates of the contribution of various
21 factors to volume change for the subclass from 1994 to 1999 are given
22 along with a discussion of recent developments affecting mail volume.
23 Finally, the before- and after-rates volume projections are presented for
24 the Test Year. This testimony also presents the quarterly and annual
25 before- and after-rates volume projections for 2001q1 through 2001q4.
26

27 The Technical Appendix, Workpapers and Library References accompanying
28 my testimony provide a detailed description of the volume forecast methodology and
29 present sufficient information to replicate the forecasts:
30

1 Technical Appendix: Forecast Model describes the basic approach
2 to forecasting that is used, describes the multiplicative projection factor
3 methodology by which each factor affecting future mail volumes is entered
4 into the forecasting model, describes the Forecast Error Analysis program
5 used to analyze the net trend results for 1994 to 1999, and presents the
6 net trends used in the forecasts.

7
8 Workpaper 1. Data Used in Volume Forecasts gives the quarterly
9 series used in the forecasts. These include before- and after-rates postal
10 prices, and projected values of economic variables.

11
12 Library Reference I-119. Derivation of the Before-Rates FWI Values
13 gives the derivation of the fixed weight index (FWI) values for prices in the
14 regressions and in the before-rates volume forecasts. Included in this
15 library reference are the Lotus 1-2-3 files used in the FWI calculations, on
16 diskette.

17
18 Library Reference I-120. Derivation of the After-Rates FWI Values
19 gives the derivation of the fixed weight index (FWI) values for prices used
20 in the after-rates volume forecasts. Included in this library reference are
21 the Lotus 1-2-3 files used in the FWI calculations, on diskette.

22
23 Workpaper 2. Step by Step Calculations of Volume Projections
24 contains step-by-step calculations illustrating the derivation of the
25 projection factors or multipliers and their use in arriving at forecasted
26 values for First-Class letters and First-Class cards, applying the forecast
27 methodology presented in the Technical Appendix.

28
29 Library Reference I-121. Documentation of Volume Forecasting
30 Model gives technical documentation of the Lotus program used in
31 producing the forecasts, lists the inputs used in the forecasts and supplies
32 instructions for running the forecast program. It includes diskettes
33 containing the Lotus 1-2-3 spreadsheet used in the forecasts.

34 The testimony of Thomas Thress is concerned with the econometric estimation
35 leading to many of the parameters used in the forecast model.

36 The body of the Thress testimony presents the structure of the
37 subclass time series econometric equations and describes the
38 approaches used in the estimation. The final econometric coefficient
39 estimates for each subclass are presented, and the research involved in
40 selecting the final estimates is described. Witness Thress's testimony
41 also develops the methodology and presents the estimates for the share

1 equations used in forecasting the worksharing categories for First-Class
2 and Standard A mail.

3
4 Workpaper 1 accompanying Thress testimony. Data Used in
5 Econometric Work and Econometric Results lists the sources for data
6 used and gives values of variables that are calculated rather than being
7 used in original source form in the subclass time series regressions. The
8 latter include 1) fixed weight postal price indexes, 2) permanent income,
9 3) costs of competing advertising media and 4) fixed-weight price indexes
10 for UPS and Priority Mail used in the parcel post equation. The data
11 tables in the workpaper give the quarterly series used in the regression.
12 Computer printouts are presented for the subclass time series regressions
13 from which coefficients in the Thress testimony are obtained. The
14 printouts include goodness of fit statistics, Shiller k^2 values and variance-
15 covariance matrixes. In addition, the econometric results from the
16 historical share equations are presented.

17
18 Library Reference I-122. Data Used in Regression Analyses of
19 Postal Volumes and Regression Code (hard copy and diskette), to be
20 used in conjunction with Workpaper 1 accompanying the Thress
21 testimony, includes a diskette containing data series ready for use in the
22 regressions. The dependent variable for each subclass is given as the
23 logarithm of volume per adult per business day. Among the independent
24 variables, prices and permanent income are expressed as logarithms of
25 deflated values. The other economic variables are generally expressed
26 as logarithms, while dummy variables are 0 or 1. The data used to
27 forecast worksharing categories for First-Class and Standard A mail are
28 presented. This library reference also includes the files containing code
29 used to generate the regression outputs.

30
31 Workpaper 2 accompanying Thress testimony. Estimation of
32 Permanent Income Elasticities and Standard Errors for Mail Categories
33 from the 1994 Household Diary Study contains details on the estimation
34 of cross-sectional income elasticities and standard errors from the
35 *Household Diary Study* and their transformation to obtain permanent
36 income elasticities for use in the basic quarterly time series subclass
37 regressions.

38
39 Library Reference I-123. Regression Documentation. Cross
40 Sectional Income Coefficients and Standard Errors (hard copy and
41 diskettes) describes the software and data preparation methods, and
42 gives the input and regression output files underlying the foregoing
43 workpaper.
44

1 Workpaper 3 accompanying Thress testimony. Choice Trail Results
2 for Modeling Demand Equations presents intermediate econometric
3 results leading to econometric results presented in Thress testimony.
4

5 Workpaper 4 accompanying Thress testimony presents a discussion
6 of extra ounces in First-Class letter.

II. FIRST-CLASS MAIL

A. General Characteristics

1. First-Class Mail as a Means of Communication

Of the 199.5 billion pieces of total domestic mail handled by the Postal Service in 1999, more than half or 101.4 billion pieces consisted of First-Class Mail. The most distinguishing feature of First-Class Mail is that it contains private messages.

Handwritten or typewritten messages, as well as hard copy computer output if it has the character of personal correspondence, must be sent by First-Class Mail. Bills, statements of account and messages associated with a business transaction are considered to be private messages and must be sent by First-Class Mail.

First-Class Mail is guaranteed against postal inspection and is accorded expeditious handling. It is forwarded without extra charge. First-Class letters are returned without extra charge if not deliverable. The use of First-Class Mail is protected by restrictions on competition for the carriage of private messages created by the Private Express Statutes. In important instances, exceptions to these restrictions are made, permitting nonpostal carriers to deliver private messages, as in the case of private delivery of overnight mail. Electronic communication by computers is not covered by the Private Express Statutes and serves as an alternative to sending First-Class Mail in many cases.

2. First-Class Mail Substreams

Chart B shows a breakdown of First-Class Mail based on data from the 1997 *Household Diary Study*. Nonhousehold entities, primarily businesses, are involved in the preponderance of First-Class Mail. Chart B shows that in 1997, 41.0 percent of First-Class Mail was sent from nonhouseholds to households and an additional 42.7 percent was sent from nonhouseholds to other nonhouseholds.

Chart B
BREAKDOWN OF FIRST-CLASS MAIL ACCORDING TO FLOWS
BETWEEN SENDER AND RECEIVER GROUPS, 1997

<u>Nonhouseholds to Households</u>	41.0%
Business or Non-Federal Government	
Advertising Only	6.8%
Notice of Order	1.2%
Bill/Invoice/Premium	15.9%
Financial Statements	4.8%
Payments	1.3%
Invitation or Announcement	3.1%
Other	4.4%
Social, Charitable, Political or Nonprofit	
Announcement/Meeting	1.7%
Request/Confirmation of Donation	0.6%
Other	0.6%
Don't Know / Don't Answer	0.6%
<u>Nonhouseholds to Other Nonhouseholds</u>	42.7%
<u>Households to Nonhouseholds</u>	9.6%
Response to Advertising	1.3%
Payment of Bills	3.1%
Other	4.7%
Don't Know / Don't Answer	0.6%
<u>Households to Other Households</u>	6.5%
Correspondence	3.8%
Holiday/Greeting Cards	2.5%
Other	0.2%
<u>Unknown Incoming or Outgoing</u>	0.6%
<u>Total</u>	100%

Source: 1997 Household Diary Study, Table 4-1, Table 4-10, Table 4-48

1 Chart B shows that 15.9 percent of the First-Class Mail sent from nonhouseholds
2 to households consists of bills, invoices, or premiums. Other important types of
3 nonhousehold to household First-Class Mail include advertising and financial
4 statements. First-Class Mail sent by nonhouseholds to other nonhouseholds involves
5 not only bills, but also statements, checks, correspondence and advertising.

6 In 1997, 9.6 percent of First-Class Mail was sent by households to non-
7 households. Much of the First-Class Mail sent by households consists of payments of
8 bills or responses to advertising. The relatively small proportion of the mail sent
9 between households (6.5 percent of total First-Class Mail) is devoted mostly to personal
10 correspondence with greeting and holiday cards representing a majority of household to
11 household mail. Overall, households sent 16.1 percent and received 47.5 percent of
12 First-Class Mail in 1997.

13 3. Changes Since 1987

14 Important changes in the composition of First-Class Mail have occurred over the
15 years. Chart C gives figures for 1987, based on the *1987 Household Diary Study*.
16 Comparing Chart B for 1997 to Chart C for 1987, it can be seen that the general trend
17 has been a decrease in the share of First-Class Mail sent by households. In 1987,
18 households sent 21.3 percent of First-Class Mail. Another significant change has been
19 the increase in mail volume sent from nonhouseholds to other nonhouseholds.
20 Whereas in 1997, nonhousehold-to-nonhousehold mail represented 42.7 percent of
21 total First-Class Mail, in 1987 this figure was only 35.6 percent. The increase in
22 nonhousehold mail between 1987 and 1997 reflects the importance of mail as an input
23 in the production of goods and services, with mail volume being associated with growth
24 in the economy and in demands for communication in production.

Chart C

BREAKDOWN OF FIRST-CLASS MAIL ACCORDING TO FLOWS
BETWEEN SENDER AND RECEIVER GROUPS, 1987

<u>Nonhouseholds to Households</u>	41.2%
Business or Non-Federal Government	
Advertising Only	5.2%
Notice of Order	1.4%
Bill/Invoice/Premium	14.7%
Financial Statements	5.0%
Payments	1.9%
Invitations or Announcements	1.5%
Other	7.4%
Social, Charitable, Political or Nonprofit	
Announcement/Meeting	1.3%
Request/Confirmation of Donation	0.6%
Other	1.6%
Don't Know/Don't Answer	0.6%
<u>Nonhouseholds to Other Nonhouseholds</u>	35.6%
<u>Households to Nonhouseholds</u>	12.2%
Response to Advertising	3.6%
Payment of Bills	3.1%
Other	4.7%
Don't Know/Don't Answer	0.8%
<u>Households to Other Households</u>	9.1%
Correspondence	2.6%
Holiday/Greeting Cards	6.0%
Other	0.5%
<u>Unknown Incoming or Outgoing</u>	1.9%
<u>Total</u>	100%

Source: 1987 Household Diary Study, Table 4-1, Table 4-10, Table 4-48

1 The decrease share of First-Class Mail sent by households has been a long-term
2 trend. The R87-1 volume testimony (USPS-T-2, Docket No. R87-1, p. 20) noted that in
3 1977, households sent 28 percent of First-Class Mail. Charts B and C of the present
4 testimony show that this share fell to 21.3 percent in 1987 and 16.1 percent in 1997.
5 Similarly, the share of mail sent between nonhouseholds has increased from 33 percent
6 in 1977 to 35.6 percent in 1987 and to 42.7 percent in 1997.

7 **4. Organization of the Remainder of Chapter**

8 The remainder of this chapter is organized as follows. Section B discusses the
9 characteristics of First-Class letter mail. The volume history of letters is reviewed with
10 special attention to differences in the behavior of single-piece and workshared letters.
11 Section C examines factors affecting the volume of single-piece First-Class letters,
12 followed by a discussion of recent developments influencing the demand for this mail
13 product. Section C concludes with a presentation of the before- and after-rates
14 forecasts of single-piece letters. Section D presents factors affecting workshared
15 letters, discusses recent developments, and presents the before- and after-rates
16 volume forecasts. Section E follows a similar procedure for stamped First-Class cards,
17 as does Section F for private First-Class cards.

B. First-Class Letters

1. Definition

First-Class letters are the most commonly used type of mail and consist of envelopes and sealed packages containing private messages, provided the weight is less than 13 ounces. Priority Mail, the volumes of which are considered in the testimony of Dr. Gerald Musgrave (USPS-T-8), is available for weights of more than 13 ounces.

There are two major categories within the First-Class letter subclass, single-piece letters and workshared letters. Single-piece letters refer to letters that do not receive any presort or automation discounts. Workshare letters are letters for which a postal discount is granted. Workshare letters, in turn, consist of nonautomated presort letters and automated letters. Within automated letters, there exists four presort categories: basic, 3-digit, 5-digit, and carrier-route.

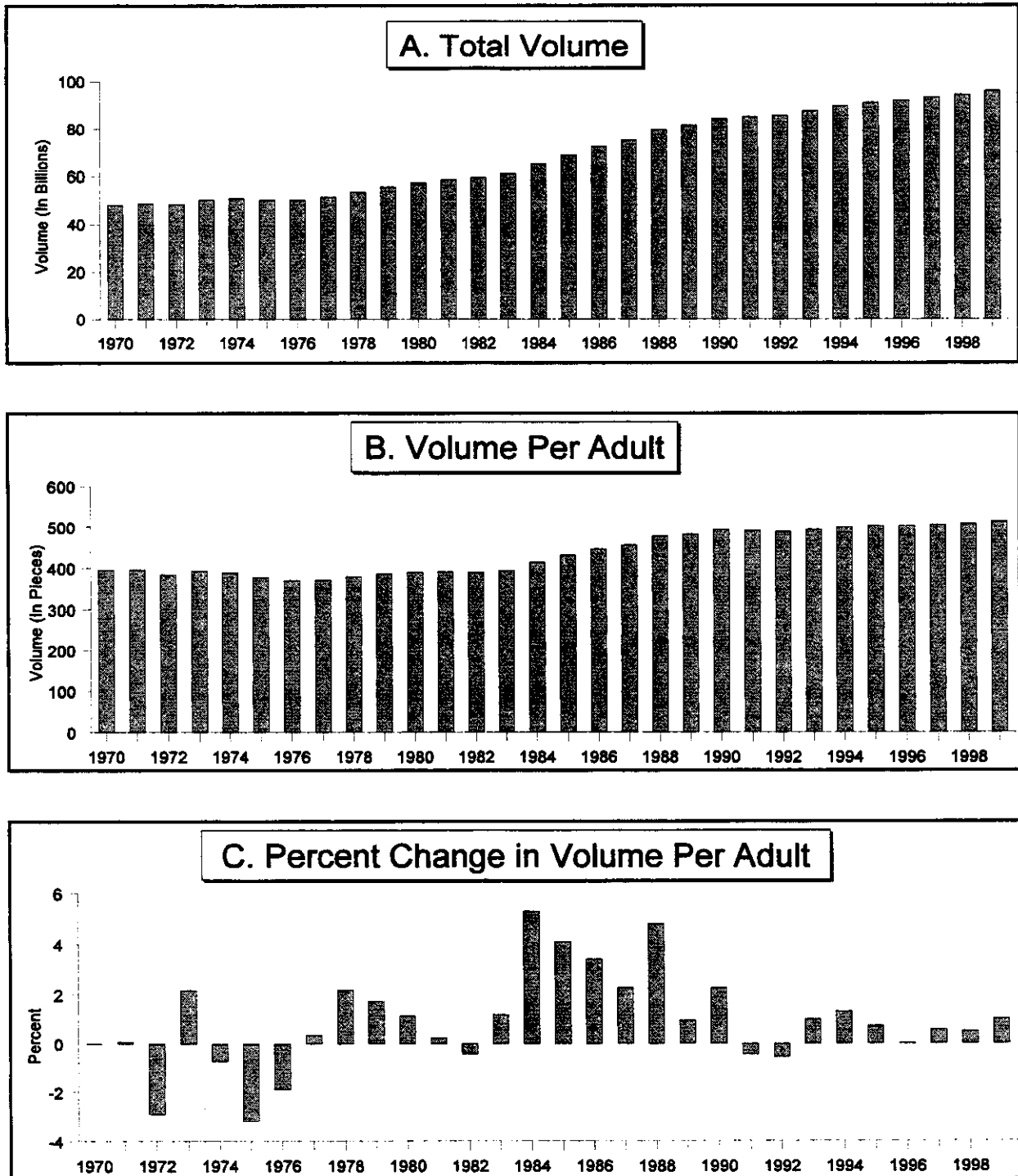
2. Volume History

a. Total Letters

Figure 2 presents the annual volume history of First-Class letters from 1970 to 1999. As shown in the upper part of Figure 2, total First-Class letter volume grew sluggishly in the 1970s. The middle panel reveals that population growth alone was responsible for most of the growth in the 1970s. Volume was 394 pieces per adult in 1980, essentially the same as in 1970.

In the 1980s, volume growth substantially exceeded population growth, with 496 pieces per adult being reached in 1990. Volume growth was strongest in the 1983 to 1988 period, with volume per adult rising more than 20 percent over this period. Volume per adult declined again in 1991 and 1992 but has grown every year since

Figure 2
Total First-Class Letters



1 reaching an all-time high of 515 pieces per adult in 1999, 30 percent greater than its
2 level in 1970 or 1980.

3 **Inclusion of Government Mail.** Government mail consists of mail sent by
4 government agencies, often referred to as penalty mail because unauthorized use is
5 punishable by a \$300 penalty. In 1988, the Postal Service began reporting a separate
6 set of mail volumes with government mail distributed, meaning that the volume totals of
7 each mail subclass include the government mail sent via that subclass. The mail
8 volume presented in Figure 2 and all subsequent figures, does not include government
9 mail in the years before 1988, but does include government mail in the years 1988 and
10 after. Generally, government mail represents a small portion of total volume, usually
11 less than two percent.

12 The before- and after-rates volume forecasts presented in this testimony include
13 government mail to conform with the present reporting standards.

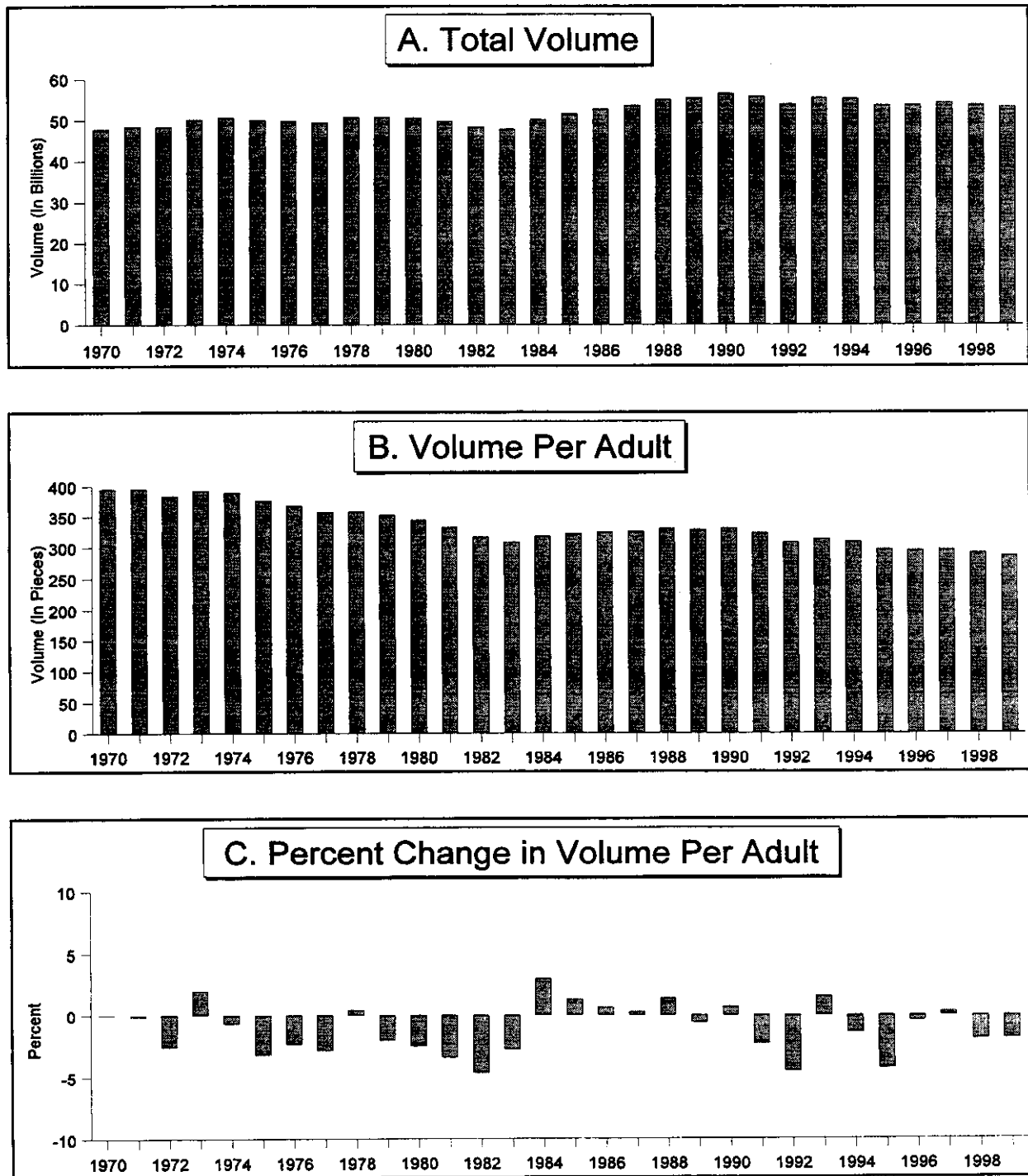
14 **b. Single-Piece Letters**

15 Single-piece letters refer to letters that do not receive any presort or automation
16 discounts. Figure 3A shows the volume history of single-piece letters from 1970 to
17 1999. Prior to 1976, all First-Class letter mail was categorized as single-piece mail.
18 Volume per adult was 398 pieces in 1970 and has gradually declined since then. One
19 factor explaining this long-term decline was the introduction and expansion of presort
20 and automation discounts, the first of which was started in 1976. In 1999, single-piece
21 letter volume per adult was 286 pieces, thirteen percent less than in 1990 and 28
22 percent less than in 1970.

23 **c. Workshared Letters**

24 First-Class workshared letters consist of all letters that receive a discount for being
25 presorted or automated. The five categories of First-Class workshared letters are

Figure 3A
Single-Piece First-Class Letters



1 nonautomated presort and the four automation categories: basic, 3-digit, 5-digit, and
2 carrier-route. Within this testimony, volume forecasts are presented for total
3 workshared letters and for nonautomated presort and total automated letters. The
4 testimony of Tom Thress (USPS-T-7) discusses the methodology employed to forecast
5 the workshared letter categories.

6 Figure 3B shows the volume history of workshared letters ending in 1999 and
7 beginning in 1977, the first full year in which workshare discounts were given.
8 Comparing Figure 3B to Figure 3A shows important differences between the volume
9 histories of workshare and single-piece letters. Workshare letter volume has increased
10 every year since its introduction. Growth in volume per adult was particularly strong in
11 the early years of this category, with double digit percentage gains occurring every year
12 until 1987. In 1999, workshared letter volume per adult reached 229 pieces, more than
13 40 percent more than at the start of the decade.

14 The pronounced differences between the past volume behavior of single-piece
15 and workshared letters warrants separate examination of the demand factors for these
16 two products, while at the same time recognizing the interaction between the products'
17 demands. As such, this testimony provides separate analysis of single-piece and
18 workshared letters.

19 **C. Single-Piece Letters**

20 **1. Factors Affecting Volume of Single-Piece Letters**

21 Table 2 shows the impact of different factors on the volume of single-piece letters
22 over the five year period from 1994 to 1999. The total volume of single-piece letters
23 declined by 3.52 percent over this five-year period, as shown in the final row of Table 2.
24 The impact of each of the different factors listed in Table 2 on the volume of single-
25 piece letters over the past five years will be discussed in turn.

Figure 3B
Workshared First-Class Letters

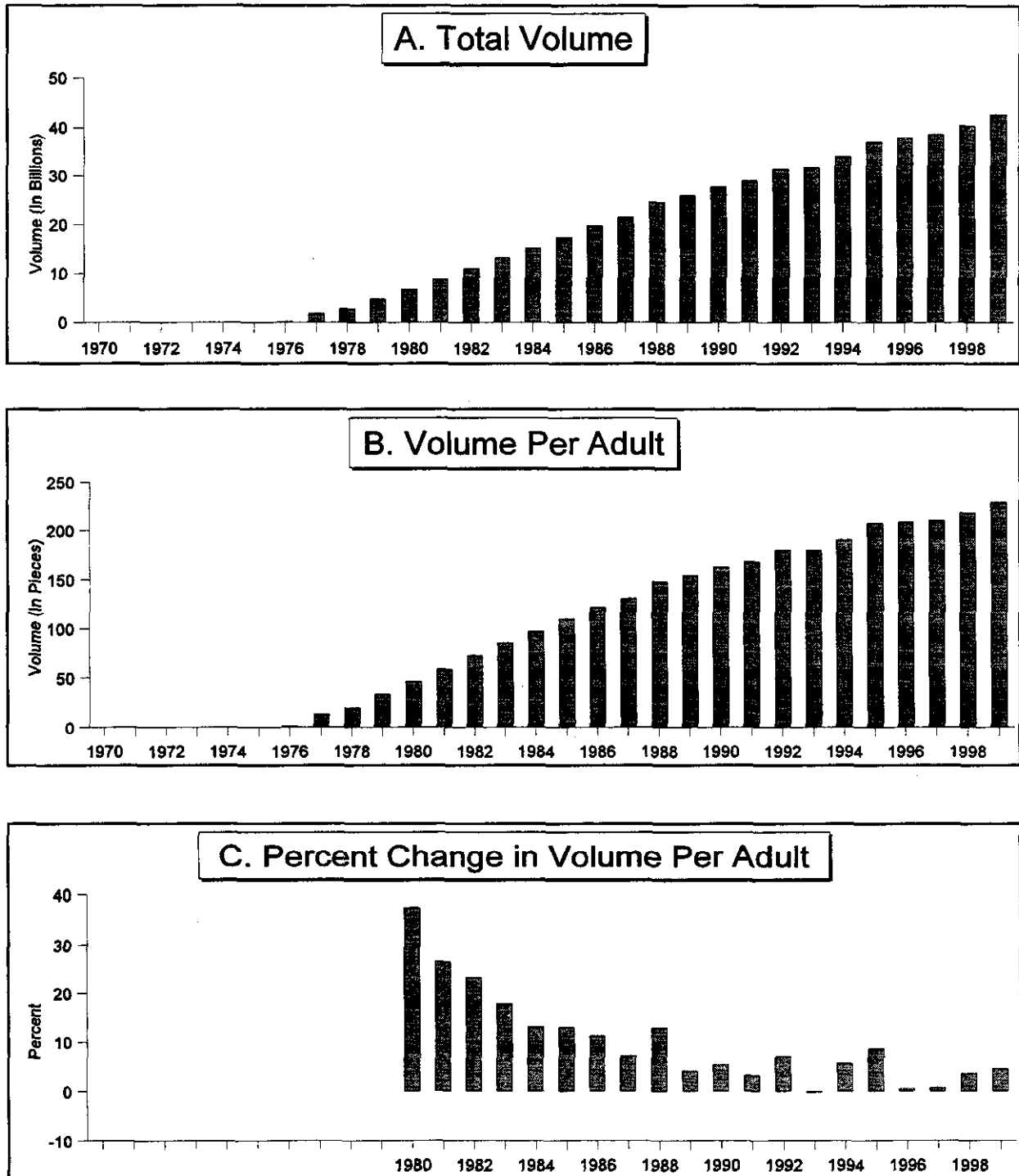


TABLE 2
CONTRIBUTIONS TO CHANGE IN
SINGLE-PIECE FIRST-CLASS LETTERS VOLUME FROM 1994 TO 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own Price	3.2%	-0.262	-0.82%
Cross Prices			
Workshare Discount	29.0%	-0.139	-3.47%
Single-Piece Cards	-3.1%	0.006	-0.02%
Income			
Permanent	7.1%	0.513	3.57%
Transitory (Lag 3)	0.7%	0.156	0.11%
Adult Population	4.66%	1	4.66%
MC95-1 Rule Change			6.01%
R97-1 Rule Change			0.33%
Other Factors			-13.89%
Total Change in Volume			-3.52%

a. Own Price

Table 2 indicates that the real price of First-Class single-piece letters, measured as a fixed weight index (FWI) price, increased by 3.2 percent from 1994 to 1999. The increase in real price leads to a decline in volume. The response of mailers to changes in real price occurs over a period of several quarters as mailers gradually adjust to the new price. The single-piece own-price elasticity of -0.262 presented in Table 2 is the long-run own-price elasticity. The long-run price elasticity measures the impact on volume that would occur if the price were to rise one percent and stay at its new level indefinitely. The

1 long-run elasticity is the sum of the elasticity responses occurring in the quarter of the price
2 change and each quarter in which it has an effect after that.

3 Applying the estimated own-price elasticity of -0.262 to the 3.2 percent increase in the
4 real price of single-piece letters leads to a 0.82 percent decline in volume, as shown in the
5 final column of Table 2.

6 **b. Cross-Prices**

7 First-Class single-piece letter volume is influenced not only by its own-price but also
8 by the price for other mail categories which serve as substitutes for single-piece letters.
9 One factor which influences the volume of single-piece letters is the discount for
10 workshared letters, measured as an average discount of the various workshared
11 categories. An increase in the discount for workshared letters, holding the base price of
12 single-piece letters constant, would make worksharing relatively more attractive and some
13 mailers who were not previously presorting or automating their mail would be induced to
14 do so. It is estimated that a one percent increase in the average discount for workshared
15 letters leads to a 0.139 percent decline in the volume of single-piece letters. Table 2
16 shows that the 29.0 percent increase in the average worksharing discount from 1994 to
17 1999 led to a 3.47 percent decline in the volume of single-piece letters.

18 The volume of single-piece letters is also affected by the price of First-Class single-
19 piece cards, which can serve as a substitute for letters. Table 2 shows that the real price
20 of single-piece cards decreased by 3.1 percent from 1994 to 1999. It is estimated that the
21 cross-price elasticity between the volume of single-piece letters and the price of single-
22 piece cards is 0.006. Applying this estimated cross-price elasticity to the percentage
23 change in price yields a 0.02 percent decrease in single-piece letter volume.

24

25

1 **c. Income**

2 Another factor affecting mail volume is income. The impact of income on the
3 volume of single-piece letters is decomposed into separate affects of permanent and
4 transitory income. Permanent income is a weighted average of past personal
5 disposable income. Table 2 shows that a one percent increase in real permanent
6 income per adult is estimated to lead to a 0.513 percent increase in the volume of
7 single-piece letters. Applying that estimated elasticity to the 7.1 percent increase in real
8 permanent income per adult that occurred from 1994 to 1999 yields a 3.57 percent
9 increase in the volume of single-piece letters.

10 Single-piece letter volume is also affected by transitory changes in income
11 associated with business cycles. The transitory effects will tend to average out over
12 time but they could have an effect for any specific period if the beginning and end of the
13 period are not at the same stage of the business cycle. Transitory income is measured
14 by the Federal Reserve Board's Index of Capacity Utilization, or UCAP. The
15 econometric analysis shows that the impact of transitory income on single-piece volume
16 comes after a three quarter lag.

17 Table 2 shows that transitory income, lagged three quarters, increased by 0.7
18 percent from 1994 to 1999. The estimated elasticity of First-Class single-piece volume
19 with respect to transitory income is 0.156, meaning that the 0.7 percent increase in
20 transitory income contributed 0.11 percent to the volume of single-piece letters.

21 **d. Adult Population**

22 Mail volumes are measured on a per adult basis in the econometric estimation of
23 mail demand and the impact on mail volume of the factors discussed above is
24 presented on a per adult basis as well. Total mail volume is equal to volume per adult
25 multiplied by adult population. Similarly, changes in mail volume can be decomposed

1 into changes in volume per adult and changes in adult population. If there were no
2 change in mail volume per adult, total mail volume would still change due to the growth
3 in adult population over time. Table 2 shows that from 1994 to 1999, growth in adult
4 population by itself is responsible for a 4.66 percent increase in the volume of single-
5 piece letters.

6 **e. MC95-1 Rule Changes**

7 As a result of the MC95-1 classification reforms, the discount for what had been
8 known as nonautomated presort letters was reduced substantially while the discounts
9 for automation letters were increased. Much of the impact of these changes in
10 discounts on single-piece letter volume is measured through the workshare discount
11 elasticity discussed earlier. However, the workshare discount does not take into
12 account the detailed changes in individual category workshare requirements. To
13 account for these rule changes, an MC95-1 dummy variable is included in the single-
14 piece volume demand equation, with the variable having a value of zero before
15 classification reform and a value of 1.0 after classification reform.

16 Table 2 shows that a 6.01 percent increase in single-piece letter volume is
17 attributed to the MC95-1 rule change dummy variable. The positive volume impact
18 results because MC95-1 imposed greater workshare requirements while also providing
19 greater workshare discounts. The greater workshare requirements are responsible for
20 greater volume of single-piece letters than would be expected if only the increases in
21 workshare discounts were considered.

22 **f. R97-1 Rule Changes**

23 As a result of the R97-1 rate case, Standard A single-piece mail was eliminated.
24 Moreover, the break-point between First-Class letters and Priority Mail changed from 11
25 to 13 ounces. These two rule changes have the effect of increasing First-Class letter

1 mail as mail shifts in from Standard A and Priority Mail. This shift of volume is
2 measured through a R97-1 rule change dummy variable, estimated to have increased
3 the volume of single-piece letters by 0.33 percent.

4 **g. Other Factors**

5 In addition to variables whose impacts have been quantified above, other factors
6 have affected single-piece letter volume over the past five years. As shown in Table 2,
7 the other factors contributed a 13.89 percent decline in volume. The decline is
8 explained primarily by a negative econometric time trend effect. Reasons for the
9 decline will not be discussed.

10 **i. Declining User Costs**

11 One consideration explaining the negative contribution of other factors to single-
12 piece letter volume is declining costs for mail automation (referred to as user costs) that
13 have led mailers to shift from single-piece to workshared letters. Movement between
14 single-piece and workshared letters due to changes in the workshare discount and the
15 MC95-1 reforms have already been accounted for as separate effects in Table 2. We
16 are concerned here with additional changes due to declining costs on the part of
17 mailers preparing mail to satisfy discount requirements.

18 **i.1. Direct Evidence**

19 Evidence of declining user costs come in two basic forms: direct evidence and
20 indirect evidence. Direct evidence of declining user costs can be found in the
21 improvements in automation equipment, which serve to lower automation costs per
22 piece, and the growth in the number of presort/automation bureaus and their spread
23 from major cities into smaller metropolitan areas, thereby allowing more mailers
24 alternatives to single-piece mail.

In addition to technological advances, there has been growth in the number of presort/automation bureaus across the nation. In mid-1997, there were 276 companies listed on the Postal Service's web site as MLOCR Service Bureaus. This compares with just 186 listed bureaus in 1995, nearly a fifty percent increase. The growth has been concentrated in areas with relatively smaller populations. For example, within metropolitan areas with population of one million or more, there occurred a 13 percent increase in the number of MLOCR bureaus. In contrast, metropolitan areas with populations under 300,000 experienced a two hundred percent increase in the number of bureaus and now comprise thirty percent of all the bureaus nationwide. This spread of bureaus into less populated areas means that more mailers have access to presort/automation opportunities and explains part of the shift of single-piece mail into workshare mail.

i.2. Indirect Evidence

Indirect evidence of declining user costs is found in the decreases in single-piece letter volume and corresponding increases in workshared letter volume that occur in periods during which workshare discounts remained unchanged. For example, from 1997q1 to 1999q1, First-Class letter workshare discounts did not change. Over this period, single-piece letter volume declined, despite increases in adult population and

1 income, from 12.8 billion pieces in 1997q1 to 12.3 billion pieces in 1999q1. At the
2 same time, workshared letter volume increased from 8.7 billion to 9.8 billion pieces. It
3 seems likely that some of these volume changes represented shifts from single-piece to
4 workshare and that, in the absence of a change in discount, these shifts were driven by
5 technological advancements that lowered workshare user costs.

6 **i.3. Evidence from *Household Diary Study* Data**

7 Evidence of the impact of declining user costs comes from review of *Household*
8 *Diary Study* data. From 1992 to 1997, nonhousehold-to-household mail grew 4.3
9 percent. Within this type of mail, single-piece volume fell nearly 10 percent, while
10 workshare mail grew nearly 13 percent. A similar result is found looking at
11 nonhousehold-to-nonhousehold letter mail. While single-piece volume grew 12.5
12 percent over the five years from 1992 to 1997, this was far less than the 48.7 growth in
13 workshare volume.

14 Further analysis of *Household Diary Study* data confirm that the shift from single-
15 piece to workshared letters has been occurring for many years. Looking at the 1988 to
16 1997 period, for example, shows that the number of First-Class letter bills and
17 statements received by households increased by 21 percent. This growth rate is
18 approximately equal to that for total letters over the same period indicating that total bill
19 and statement mail is affected by the same influences as First-Class letter mail in
20 general. What has changed over this period is the shares of bill and statement mail
21 sent single-piece and workshared. In 1988, 32 percent of bills and statements sent to
22 households were sent as single-piece mail. By 1997, this share had fallen to 24
23 percent, suggesting that one-fourth of bills and statements shifted from single-piece to
24 workshared letters over the nine-year period.

1 Similar results are found for another substream of letter mail: advertising,
2 information, and announcements (AI&A). In 1988, 57 percent of AI&A mail sent to
3 households was sent as single-piece. By 1997, this figure had fallen to 42 percent,
4 again showing that about one-fourth of nonhousehold generated single-piece letters
5 shifted into workshare over a nine-year period.

6 ii. Electronic Diversion

7 The largest sources of electronic diversion are fax messaging, E-mail, electronic
8 data interchange (EDI) and electronic funds transfers (EFT), and related activities such
9 as bill-paying by computer. Another very recent development is bill presentment by
10 computer, in which households or businesses receive bill statements on-line as
11 opposed to receiving them through the mail.

12 ii.1. Fax Messaging

13 Overview. Increased volume of fax messaging has been driven by a combination
14 of factors including falling prices for fax machines, reductions in telephone rates, and
15 technological advances in both the speed of transmission and printout quality. In 1998,
16 a PC compatible plain-paper fax machine with the capacity of printing, scanning and
17 copying with a transmission speed of seven seconds per page cost less than \$500.
18 [CDW, *January Update*, 1998]. Prices are even lower today. The delivery cost of fax
19 transmissions has also fallen significantly over time. From 1985 to 1997, the rate of
20 interstate toll charge decreased by 18.5%, while that of intrastate charge fell by 12.1%
21 [U.S. Bureau of the Census, *Statistical Abstract of the United States: 1998*, Table No.
22 773; 1994, Table No. 748].

23 The proliferation of personal computers and improvements in both modem and
24 software technology have also contributed to the growing popularity of computer/PC-

1 based faxing. The two most significant changes are developments in computer-based
2 faxing (CBF) and the integration of faxing with E-mailing and the Internet. The
3 advantages of CBF over traditional standalone fax machines are numerous. First,
4 documents can be directly transmitted from a computer without the extra steps of
5 obtaining hard copies and going to a fax machine. On the receiving side, inconvenient
6 and expensive thermal fax paper is no longer needed. CBF also simplifies tasks such
7 as fax broadcasting and fax document management. A number of Internet services
8 allow users to transmit faxes via the Internet and thus save significant transmission
9 costs.

10 Types of First-Class Letter Mail Replaced by Facsimile Transmissions. Forms of
11 communication delivered by fax transmissions are mostly confirmation,
12 correspondence, and marketing messages which include delivery notices, shipping
13 instructions, purchase orders, legal documents, personal communication,
14 announcements, invitations, and advertisements. Although equipped with a substantial
15 broadcasting capability, faxing remains a low-volume messaging medium and does not
16 appear to be a major factor affecting volumes of First-Class Workshared Letters.

17 The speed of delivery gives fax an advantage over letter mail, when a fast response
18 is needed and a hard copy is required. Another advantage is its ability to connect with
19 computers, allowing more effective control and management of the communication
20 process by the service user. These advantages make fax messaging a viable
21 alternative to letter mail service. However, it still has some important disadvantages
22 relative to First-Class letter mail.

23 First, the penetration level of fax technology is far from universal. Although fax has
24 gained general acceptance among nonhousehold users, faxing to many households is

1 limited by its low penetration among them. Second, fax transmitted documents often
2 are not legally contestable or acceptable as official. Third, fax does not provide the
3 privacy or the certification of message integrity that First-Class letter mail offers.
4 Consequently, fax is often unsuitable for documents containing confidential information.
5 However, there exists fax software that incorporates security features that scramble the
6 fax image before transmission, so that confidential information can be entrusted to fax
7 transmissions. Finally, the print quality of many fax messages remains inferior to the
8 resolution of letter mail.

9 Factors Affecting Diversion of First-Class Letters. The extent that First-Class letter
10 mail is diverted by fax is a function of the volume of fax transmissions and its diversion
11 ratio of letter mail. It appears that single-piece letters are most susceptible to diversion.
12 The impact of fax on workshared letter volume is expected to be minimal due to its
13 limited use in large volume message broadcasting.

14 The volume of fax transmissions equals the number of fax machines in use (the fax
15 installment base) times the number of fax messages transmitted by each machine in
16 use. In 1987, only 584,000 fax machines were sold in the United States. [Information
17 Access Company, *Predicasts' Basebook: 1995*, SIC No. 36621 92]. During the period
18 from 1987 to 1995, unit sales jumped nearly five-fold to 2.8 million. [Electronic
19 Industries Association, *1996 Electronic Market Data Book*, Table 2-16]. In addition,
20 virtually every computer sold today includes a faxing feature.

21 A 1994 BIS report on fax penetration levels in the household sector and among
22 small businesses from 1988 to 1993 showed that among middle size businesses and
23 large corporations, fax had essentially reached universal acceptance and become a
24 common business communication medium by mid-1990. BIS estimated about 49.1

1 percent of small enterprises and 1.0 percent of households used fax for communication
2 in 1993. [BIS, "Fax and Electronic Commerce," *Proceedings, Volume 1*, from The
3 Revolution in Electronic Commerce and Interactive Marketing, Washington D.C.,
4 November 3-4, 1993].

5 The number of fax transmissions has escalated along with the proliferation of fax
6 machines. Clearly, almost all fax traffic is between businesses, with relatively small
7 volumes being transmitted by households. According to a 1996 survey of fax usage by
8 the Gallup Organization and Pitney Bowes, Fortune 500 and mid-size companies send
9 out 190 fax pages per machine daily and spend about \$15.2 million on fax-related
10 telephone expenditures annually. [Gallup Organization and Pitney Bowes, *Fax*
11 *Statistics*, www.pitneybowes.com/pbi/prodsoftware/fax/fax_stats.htm, 1996]. According
12 to the *Fax Traffic Report* published by market researcher International Data Corp.
13 (IDC), 124 billion fax pages were transmitted in the United States in 1997. IDC projects
14 an annual transmission increase of 12.9 percent, to 140 billion fax pages in 1998.
15 [Hapgood, Fred. "Just the (Digital) Fax," *CIO Web Business Magazine*, August 1998].
16 However, the number of messages sent is less, since many fax transmissions contain
17 more than one page.

18 The impact of the number of fax messages on letter mail volume during this time
19 depends on the diversion ratio. According to the Gallup and Pitney Bowes' study, 55
20 percent of business fax traffic is destined for a fax machine within the organization,
21 where letters would never have been a substitute. Even among the remaining
22 messages, it appears that many would not have been sent as letter mail. Furthermore,
23 diversion rates may be declining. Most likely, mail most easily subject to diversion has
24 already been lost.

ii.2. E-mail

Overview. E-mail, like fax, is supplied by an overlay network service that depends on other communication infrastructure for transport and routing. An E-mail service system permits the asynchronous electronic interchange of messages between persons or groups of persons. The sender composes the message in a computer file and calls the E-mail service provider by a modem that transforms the digitally formatted message into parallel signals and transmits the signals via telephone lines or cables to the message recipient's "mailbox".

The rapid growth of personal computers and increasing accessibility to the Internet have been accompanied by the increasing popularity of communication via E-mail. Currently, the Internet has become the de facto means of interconnecting a variety of E-mail systems, and interconnection to the Internet is now a requirement for any service provider who wishes to serve the mass market.

Types of First-Class Letter Mail Replaced by E-Mail. A majority of E-mail messages contain intra-organizational correspondence, personal communication, and advertising materials. More than being a substitute for letter mail, E-mail also competes with other messaging services, such as telephone communications, inter-office memos, and fax. To the extent the E-mail does divert letter mail, it would appear that single-piece letters have been more vulnerable than workshared letters.

However, E-mail messaging can be used as a medium for broadcasting information to a large number of recipients. It does not require much extra effort from the message sender compared to sending it to a single recipient, and the incremental delivery cost associated with E-mail broadcasting is minimal. In addition, since the E-mail messages traverse the Internet free, E-mail costs the same regardless of

1 destination. Therefore, the possibility exists that E-mail could replace workshared
2 letters, especially advertising mail.

3 Factors Affecting Diversion of First-Class Letters. Although E-mail is faster and
4 cheaper than postal letter mail, it has several limitations. One limitation of E-mail is its
5 market penetration. It has been estimated that only 43 percent of U.S. adults used a
6 computer in 1997. [Cortese, Amy. "A Census in Cyberspace," *Business Week*, May 5,
7 1997]. Another major limitation of E-mail is the lack of confidentiality and integrity of
8 message contents. At present, very few E-mail systems incorporate the analog of
9 "sealed envelope" for letter mail, leaving the contents of the E-mail message legible at
10 all stages of message transmission. According to David Singer, a senior software
11 engineer with the Internet Technology group at I.B.M., "E-mail is impoverished. It has
12 flaws; there is no tone of voice with E-mail. No subtlety and certainly no privacy. E-
13 mail is postcards, not letters." [Specter, Michael. "Your Mail Has Vanished," *The New*
14 *Yorker*, December 6, 1999].

15 Public opinion polls reveal that people have considerable confidence in the
16 Postal Service to maintain privacy and security of mailed material. In contrast, many
17 people have concerns about transmitting personal information over the Internet. The
18 concerns go beyond the desire of many people to avoid being bombarded with mass
19 marketed commercial E-mails ("spam"). There also appears to be some fear that the
20 Internet will allow for significant invasion of privacy and possible public release of
21 sensitive information about individual health or other personal characteristics. As such,
22 the privacy and security features of First-Class letter mail remain an important
23 advantage.

1 Already, the number of E-mail messages exceeds the volume of First-Class
2 letter mail. According to Jupiter Communications, Americans are sending 122 billion E-
3 mails annually. [Leonhardt, David. "Snail Mail: It's Alive! And It's Mutating!" *The New*
4 *York Times*, November 14, 1999]. Other estimates are even greater. However, the
5 large volume of E-mail messaging is probably not the proper basis for estimating its
6 impact on letter volume since it appears that most of the messages would never have
7 been mailed, but may have been made using the telephone or fax. In a 1998 Cyber
8 Dialogue survey of 1,000 small businesses, 38 percent of online companies said that
9 they expected to spend less on long-distance phone and fax services by using E-mail
10 instead. Seventeen percent of online companies anticipated spending less on local
11 phone services, while 18 percent planned to cut back on overnight couriers. ["Mom-
12 and-Pops Belly Up to the Net", *Business Week*, April 5, 1998].

13 Instead of focusing on the number of E-mail messages, a better basis for
14 estimating diversion due to E-mail may be the number of users. Messaging Online
15 estimates that approximately 270 million mailboxes are located in the U.S. in 1999.
16 Assuming 2.5 mailboxes per user, Messaging Online estimates a total of 108 million US
17 E-mail users. [Messaging Online, *Third Quarter Mailbox Report: 1999*,
18 www.messagingonline.com, November 29, 1999] These estimates are similar to those
19 made by Neilsen, 98 million Internet users in the second quarter of 1999, of which
20 about 36 million went online at least once a week. [eMarketer, "64.2 Million U.S. Adults
21 Online Monthly", *eStats*, www.emarketer.com/estats, May 17, 1999].

22 Accurate estimates of diversion ratios are not available. If, for illustrative
23 purposes, each E-mail user has reduced his or her letter volume by one piece per
24 month, then something on the order of 1.2 billion letters has been lost by 1999, most of

1 which were single-piece letters. Note, however, that the volume loss is a cumulative
2 total already reflected in the 1999 Base Year volume. Additional diversion due to E-
3 mail that has occurred each year is part of the negative contribution of other factors we
4 are considering in this section.

5 ii.3. Electronic Funds Transfers (EFT)

6 Overview. EFT encompasses any financial obligation settlement that is
7 completed by electronic means. There are five major EFT applications. The first is
8 Direct Deposit, a nonhousehold-to-household EFT, that allows payers to settle their
9 financial obligations, such as payroll, annuities, pension payments, and the like, by
10 direct credit to payees' financial accounts. By 1995, more than 25 million Social
11 Security payments were sent electronically each month. ["Government wide Treasury-
12 Disbursed Payment Volumes: FY 1995 - FY 1998", *Annual Payment Volume Summary*,
13 www.fms.treas.gov/eft/AGENCY/volsum.html, December 21, 1999]. The second
14 application, Direct Payment, is a household-to-nonhousehold EFT used for recurring
15 consumer periodical payments such as utility bills, mortgage payments, insurance
16 premium payments, and telephone bills. Under Direct Payment, consumers authorize a
17 biller to debit their account for recurring payments. In 1996, about 6 percent of bills, or 1
18 billion payments, were paid electronically - by telephone, automatic deduction, bank
19 cards, and personal computers. [Orr, Bill. "Electronic Bill Paying Shows Signs of
20 Soaring," *ABA Banking Journal*, May 1997]. A third EFT application relates to
21 commerce transaction settlements that include vendor payments, cash concentration
22 and disbursements. The federal government and many manufacturing and retailing
23 companies are converting their disbursements from checks to EFT. Commerce EFT
24 provides a cost effective and predictable way for large companies to move funds

1 between remote locations and multiple financial institutions. The fourth EFT application
2 involves withdrawing or moving funds among consumer's financial accounts through
3 Automatic Teller Machines (ATM). The last EFT application is the use of credit/debit
4 cards at Point-of-Sales (POS). EFT transactions involving an ATM and POS rarely
5 affect demand for letter mail.

6 Types of First-Class Letter Mail Replaced by EFT. EFT represents an effective
7 substitute for 'check-in-mail'. Almost all of the EFT generated from the household sector
8 represents a one-for-one substitute for Single-Piece letter mail. As for EFT sent by
9 nonhouseholds, demand for both Single-Piece and Workshared letters will be affected.

10 Another recent development is electronic/online banking and electronic bill
11 presentment. There were about 2.5 million online banking households in America by
12 the end of 1996, and that number is projected to grow to 18 million by 2002, according
13 to Jupiter Communications' 1997 *Home Banking Report*. [Sullivan, Orla. "The Teller
14 Line of the Future," *ABA Banking Journal*, June 1997]. Another study by Mentis
15 estimates that the total number of home banking users will reach 9.5 million in 2000.
16 The study also finds that, of banks with deposits exceeding \$1 billion, 46 percent offer
17 touch tone bill pay services, 36 percent PC Direct, and 2 percent offer Internet bill-
18 paying service. [Orr, *ABA Banking Journal*, May 1997]. Payment Systems Inc. (PSI)
19 estimates that home banking penetration is expected to reach 24 percent of households
20 by the year 2005. [*Bankers Magazine*, May/June 1997, p.49].

21 Another major technology advance in electronic banking is the development of
22 Internet-based electronic bill presentment. New developments in the interface software
23 make it possible to conduct both billing and transfer of funds electronically. It was
24 estimated that, in 1996, utilities, cable companies and merchants sent more than 16

1 billion bills to their customers. [Orr, *ABA Banking Journal*, May 1997]. The Internet
2 allows high-volume billers – telephone companies, utilities, cable companies, and
3 retailers – to provide end-to-end electronic bill presentment to their customers through a
4 third party such as CheckFree (E-Bill service) and Princeton Telecom (Electronic
5 Lockbox Service) and offer direct payment services, which will eliminate both the bill in
6 mail and paper-check transactions. A study by BlueGill Technologies forecasts that
7 Internet billings will grow from zero in 1996 to 215 million per month in 2000. [Orr, *ABA*
8 *Banking Journal*, May 1997].

9 Factors Affecting Diversion of First-Class Letters. Experts have regularly
10 predicted the demise of paper-based check payments. A 1979 Federal Reserve study
11 concluded that check usage would peak in the 1980s. In 1982, A.D. Little predicted
12 that annual check volume would peak at between 35 and 40 billion transactions and
13 diminish to 20 billion by 1993. [Lipis, Allen, "Electronics Held In Check," *Banking*
14 *Strategies*, March/April 1997]. Despite these predictions, checks have continued to
15 dominate the U.S. payment system, accounting for 72 percent of all non-cash
16 transactions, reflecting consumers' preference for check payments over electronic
17 settlements. [Klinkerman, Steve. "Checks at a Crossroads," *Banking Strategies*,
18 May/June 1997].

19 Two major reasons account for the fact that First-Class letter mail remains a
20 preferred means of financial settlements in the household sector. First, Improvements
21 in the check processing system are resulting in falling costs of handling checks, and are
22 likely to maintain demand for paper checks for some time to come. It was estimated
23 that EFT cost about 10 to 25 cents per transaction in 1996 [*Bank Credit*, January 1996],
24 as compared to about 9 cents to process a check. [Lipis, *Banking Strategies*,

1 March/April 1997]. Second, fear of losing control over the timing of bill payments and
2 the habits of paper-based personal financial management also explain the low
3 acceptance of EFT and electronic banking programs among household users.

4 The adoption of electronic banking technology does not necessarily represent
5 diversion from letter mail. CheckFree, an E-banking third-party service provider, started
6 its electronic payment services in 1981. In 1997, about 40 percent of the bills
7 CheckFree processed for consumers were delivered electronically. The remaining 60
8 percent of bill payments were transmitted to check-cutting centers, where checks were
9 printed and mailed to settle the funds transfers. [Martin, James. "Online Banking: A
10 Survivor's Guide," *PC World*, May 1997].

11 The impact of EFT on First-Class letter volume depends in part on the total
12 volume of EFT. As compiled and reported by the National Automated Clearing House
13 Association (NACHA) on their web page, EFT volume is estimated at 1.1 billion in 1987,
14 reaching 3.1 billion in 1994, and 5.4 billion projected for 1999. Thus, it is estimated that
15 over the past five years, the number of EFT transactions increased by 2.3 billion.
16 [<http://www.NACHA.org>]

17 The impact on letter volume also depends on the EFT diversion ratio. In cases
18 where EFT technology does not change the frequency of transaction settlements, it can
19 be assumed that one transaction of EFT replaces one First-Class letter. On the other
20 hand, multiple EFT may be generated which would otherwise be sent out in one check
21 payment. The diversion effect, in this case, will be less than one. Purely as an
22 illustration, if an EFT diversion ratio of 0.5 is assumed, then over the past five years, an
23 additional 1.15 billion pieces of letter mail have been diverted. This diversion is likely to

1 affect both single-piece and workshared letters, though single-piece mail probably has
2 suffered the majority of the volume loss.

3 **ii.4. Electronic Data Interchange (EDI)**

4 Overview. Electronic data interchange, EDI, is an inter-company computer-to-
5 computer communication system that transmits business documents in a standard
6 format. Early adopters of EDI were shippers and carriers who dealt with a high volume
7 of low dollar value transactions which required significant manual effort to process.
8 Unlike sending E-mail or sharing files through a network or a modem, the EDI trading
9 partners must first agree upon the format of the document and information processing
10 procedures. The decisions about the standard to be used, the information to be
11 exchanged, how the information is to be sent (through point-to-point direct connection,
12 or via a third-party EDI service provider) and when information will be sent are jointly
13 made before EDI implementation.

14 Until recently, the realm of EDI was largely a private communication tool of large
15 companies that could afford the up front investment of millions of dollars in building the
16 messaging infrastructure and communication standards to support the transport
17 mechanism for EDI. It is estimated that in 1998 over \$250 billion worth of products
18 were exchanged via EDI. [Reinhardt, Andy. "Extranets: Log On, Link Up, Save Big,"
19 *Business Week*, June 22, 1998].

20 EDI has relatively high start-up costs. Adding a single trading partner to an
21 established EDI network can cost \$50,000. However, the extensive capital investment
22 that currently occurs with EDI usage will decrease as EDI transactions move over the
23 Internet. Ne "WebEDI" service providers, such as GE's TradeWeb, allow small

1 enterprises to import EDI data directly into a PC-based business system at a cost of
2 less than \$1,000 a year. [Reinhardt, *Business Week*, June 22, 1998].

3 Types of First-Class Letter Mail Replaced by EDI. Business-to-business trade-
4 related communication tends to be document-intensive and is characterized by its high
5 communication frequency, repetition, and complicated processing procedures. These
6 characteristics also make it relatively easy and economical to standardize the
7 communication format and to automate processing procedures. Information such as
8 purchase orders, invoices, confirmation documents, and price quotes are examples of
9 EDI documents that are sent electronically without the use of letter mail. A majority of
10 messages transmitted via EDI are content-specific and would be unlikely to qualify for a
11 Workshared discount if they were delivered by mail. Lacking other information, the
12 impact of EDI on Single-Piece and Workshared letter mail is likely to be close to their
13 relative shares of total letter volume.

14 Factors Affecting Diversion of First-Class Letters from EDI. EDI has nowhere
15 near universal acceptance, but the number of EDI users is growing rapidly. The 1990
16 edition of the *EDI Yellow Pages International* listed about 8,800 EDI-capable
17 companies. That number increased to 40,000 in 1994. A study by Payment System
18 Inc. (PSI) reveals that just 3 percent of all companies used EDI to communicate with at
19 least some of their trading partners in 1995. The report also showed that significant
20 penetration was limited to firms with more than \$100 million in annual sales and only
21 one third of companies in this size category used EDI. [PSI, *Financial Correspondence*
22 *and Transactions Market Analysis: Bills, Statements, Payments and Related Financial*
23 *Transactions and Messages*, November 1995, p.47]. The *EMA Market Research*

1 Survey reported total EDI expenditures, including software and consulting expenses
2 and VAN service charges, of \$660 million in 1994, up from \$250 million in 1990.

3 Compared to other electronic alternatives discussed in this testimony, EDI is a
4 relatively new development. The effectiveness of EDI in replacing letter mail depends
5 on its usage and diversion ratio. In cases where more than one bill or invoice would
6 have been mailed in the absence of EDI technology, the EDI diversion ratio will be less
7 than one. Moreover, a significant portion of EDI usage simply replaces telephone calls,
8 fax transmissions, or E-mail messaging that were used to transmit documents before
9 the adoption of EDI technology and thus has no impact on demand for letter mail.
10 Letters may also complement EDI transmissions, i.e., letters are sent out to follow-up
11 EDI transmissions, and are not replaced by EDI.

12 **iii. Decline in Mail Sent by Households**

13 In addition to declining user costs for workshared mail and electronic diversion, a
14 third factor contributing to the decline in single-piece letter volume is the decline in mail
15 sent by households. Data from the *Household Diary Study* shows that mail sent by
16 households declined from 17.6 billion pieces in 1988 to 15.5 billion pieces in 1997. It is
17 unlikely that much of this decline represents a shift into workshared letters as
18 households would not be expected to send much, if any, workshared mail. However, it
19 may be partly a reflection of a move toward electronic communication alternatives.

20 It should be noted, however, that the decline in mail sent by households is part of
21 a longer trend that predates electronic diversion. Recall the discussion presented
22 earlier in this chapter which noted the decline in mail sent by households that occurred
23 from 1977 to 1987, a time period in which the impacts of electronic diversion must have
24 been quite small. Therefore, it seems that some of the decline in household generated

mail reflects a continuation of a longer-term trend, independent of more recent impacts of electronic diversion.

2. Volume Forecasts for Single Piece First-Class Letters

a. Overview of Forecast Methodology

In making the Test Year volume forecast, estimates of the contributions of econometric variables are obtained by multiplying each estimated elasticity coefficient by a projection of the percentage change in the associated explanatory variable between the Base Year and the Test Year. The projections were done on a quarterly basis and then aggregated to obtain results for the entire Test Year. The projections of many of the variables were taken from projections by DRI. The econometric variables also include econometric time trends, which account for significant recent changes in single-piece volume and are included in making the Test Year forecast

In the before-rates projection, the present rate schedule is assumed to remain in effect through the Test Year. Note, however, that because the R97-1 rates were implemented during the Base Year (PFY 1999), the Base Year prices are a mix of the R97-1 rates and what were essentially the R94-1 rates. In the before-rates forecast, the Test Year prices are the R97-1 rates, adjusted for inflation between the Base Year and the Test Year. Consequently, for some mail subclasses, the real Test Year before-rates prices are *greater* than the Base Year prices because the R97-1 rates are sufficiently greater than the R94-1 rates that prevailed during part of the Base Year. Generally, Test Year before-rates prices are lower than Base Year prices because inflation between the Base Year and the Test Year serves to reduce real postage prices.

1 The after-rates projection employs the same methodology as the before-rates
2 forecast, except that the rates proposed by the Postal Service are assumed to be
3 implemented on the first day of the Test Year, October 1, 2000. Details of the forecast
4 methodology are given in the Technical Appendix to this testimony and in Workpaper 2
5 which gives sample calculations enabling replication of the projections.

6 In both the before-rates and after-rates forecast, consideration is given to the
7 impact of non-econometric influences on mail volume. While most of the decline due
8 to other factors in Table 2 is explained by econometric time trends, a departure from
9 what was predicted by econometric estimates for the last five years was also among the
10 other factors affecting mail volume. This effect is shown as the five-year mechanical net
11 trend in Table A-3 of my Technical Appendix. The mechanical net trend for single-piece
12 letters is 0.997841, equal to an average annual decline of only about 0.22 percent ($1 -$
13 0.997841).

14 In assessing whether to include continuation of the mechanical net trend into the
15 forecast period, recent developments affecting volume are reviewed, volume forecast
16 errors from the last five years of quarterly data are examined, and the relation between
17 the non-econometric and econometric impacts on mail volume are analyzed to
18 determine if an additional trend term is needed. In most cases, as is the case with
19 First-Class single-piece letters, the volume forecasts do not include an additional net
20 trend.

21 **b. Before-Rates Forecast**

22 Table 2A shows that the Base Year volume of First-Class single-piece letters is
23 53, 412.621 million pieces. Non-rate factors – that is, all factors aside from postal rates
24 – serve to reduce volume by 1.38 percent between the Base Year and the Test Year. If

postal rates remain unchanged, real postal rates decline due to the projected 3.76 percent increase in the price level between the Base Year and the Test Year. This decline in the real price of single-piece letters contributes 1.02 percent to volume, resulting in a before-rates Test Year volume forecast of 53,213.828 million pieces, as shown in Table 2A.

c. After-Rates Forecast

Table 2A shows that the Base Year volume and the impact of the non-rate variables are the same after-rates as they are before-rates. The proposed increase in rates, including the proposed increase in the average workshare discount and the price of single-piece cards, after adjusting for inflation between the Base Year and the Test Year, is projected to increase single-piece volume by 0.38 percent between the Base Year and the Test Year. Thus, the after-rates Test Year forecast of single-piece letters is 52,877.658 million pieces.

Table 2A
Volume Forecast of First-Class Single-Piece Letters

	Before-Rates	After-Rates
Base Year Volume (Millions)	53,412.621	53,412.621
Non-Rate Impact	-1.38%	-1.38%
Postal Rate Impact	+1.02%	+0.38%
Test Year Volume (Millions)	53,213.828	52,877.658

D. Workshared Letters**1. Factors Affecting Volume of Workshared Letters****a. Own-Price**

Table 3 shows that from 1994 to 1999, the volume of workshared letters has increased by 25.38 percent. One factor contributing to this increase in volume was the 1.7 percent decrease in the real own-price of workshared letters. Table 3 shows that the estimated own-price elasticity of workshared letters is -0.251 and applying this elasticity to the 1.7 percent decrease in real price leads to a 0.42 percent increase in workshared letter volume.

b. Cross-Prices

Table 3 shows that workshared letter volume is affected by the level of the workshare discount as well as by the price of workshared First-Class cards and Standard A Regular mail. Over the past five years, the real workshare discount -- measured as a volume-weighted average of the various presort and automation discounts -- increased by 28.1 percent. Applying the estimated discount elasticity of 0.216 to this change in the workshare discount leads to a 5.51 percent increase in the volume workshared letters.

Workshared letters are also affected by the price of workshared cards which, for some mailers, can serve as a substitute. Table 3 shows that the estimated cross-price elasticity between the volume of workshared letters and the price of workshared cards is 0.009. Applying this estimated cross-price elasticity to the 8.5 percent decline in the real price of workshared cards produces a 0.08 percent decline in the volume of workshared letters.

1 Another substitute for workshared letters in some instances is Standard A
2 Regular mail. The estimated cross-price elasticity of workshared letter volume with
3 respect to Standard A Regular price is 0.045. Therefore, the 5.0 percent increase in
4 the real price of Standard A Regular mail over the past five years contributed 0.22
5 percent to the volume of workshared letters. Standard A ECR mail might be
6 considered another substitute for workshared letters. However, because the portion of
7 workshared letters that are presorted to the carrier-route level is so small, it was
8 determined that any cross-price effect from changes in Standard A ECR mail price
9 would be too small to merit inclusion in the volume analysis. Analysis of the cross-price
10 relations between First-Class and Standard A mail is presented in the testimony of
11 Thomas Thress (USPS-T-7).

12 **c. Income**

13 The elasticity of workshared letter volume with respect to permanent income per
14 adult is estimated to be 0.406. Table 3 shows that permanent income per adult
15 increased by 7.1 percent from 1994 to 1999 which, after applying an elasticity of 0.406,
16 leads to a 2.82 percent increase in workshared letter volume.

17 Transitory income, measured by UCAP, also affects the volume of workshared
18 letters. The elasticity of workshared volume with respect to transitory income is
19 estimated to be 0.452. From 1994 to 1999, transitory income decreased by 2.3 percent
20 and this decrease is found to have reduced the volume of workshared letters by 1.05
21 percent. Note that the transitory income measure used to explain the volume of single-
22 piece letters is lagged three quarters (see Table 2) and this explains the difference in
23 the percent change in the variable over the past five years.

TABLE 3
CONTRIBUTIONS TO CHANGE IN
WORKSHARED FIRST CLASS LETTERS VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own Price	-1.7%	-0.251	0.42%
Cross Price			
Workshare Discount	28.1%	0.216	5.51%
Workshared Cards	-8.5%	0.009	-0.08%
Standard A Regular	5.0%	0.045	0.22%
Income			
Permanent	7.1%	0.406	2.82%
Transitory	-2.3%	0.452	-1.05%
Adult Population	4.67	1	4.67%
MC95-1 Rule Change			-8.56%
Other Factors			21.43%
Total Change in Volume			25.38%

d. Adult Population

Table 3 shows that growth in adult population led to a 4.67 percent increase in the volume of First-Class workshared letters.

e. MC95-1 Rule Change

As explained in the section on single-piece letters, the MC95-1 classification reform increased automation discounts but in some cases imposed greater worksharing requirements. While the increase in the discounts taken by themselves act to increase workshare volume, the greater workshare requirements, also taken by themselves,

1 serve to reduce workshare volume. To account for this latter impact of classification
2 reform, an MC95-1 dummy variable is included in the demand equation for workshared
3 letters, analogous to the approach used in single-piece letters. Table 3 shows that this
4 variable is estimated to have reduced workshared letter volume by 8.56 percent.

5 **f. Other Factors**

6 Table 3 shows that other factors contributed a 21.43 percent increase in
7 workshared letter volume over the past five years. Almost all of this increase was
8 accounted for by econometric trend terms.

9 **i. Declining User Costs**

10 As discussed in the section on single-piece letters, declining costs for preparing
11 presorted and barcoded mail have caused a shift of several billion single-piece letters
12 into workshared letters. The resulting increase in workshare volume is one of several
13 factors contributing to volume and measured as part of the econometrically estimated
14 trend term in the workshared letter equation.

15 **ii. Electronic Diversion**

16 Workshare letter volume has also been reduced by use of fax, E-mail, EFT, EDI
17 and other forms of computer-based communication. To some extent, workshared
18 letter volume is threatened by the growing acceptance of these technologies. As more
19 and more households and businesses are connected by computers, it makes it possible
20 for larger and larger volumes of correspondence between parties, the kind of
21 correspondence likely to be sent as workshared letters.

22 Still, the evidence is not compelling that workshared letter volumes have been
23 particularly hard hit by electronic diversion. Over the past five years, total workshared
24 letter volume has grown more than 25 percent. Moreover, the five-year mechanical net

1 trend for workshared letters is 1.003736, as shown in Table A-4 of my Technical
2 Appendix. Thus, workshare letter volume has actually grown slightly more (about 0.37
3 percent per year on average) over the past five years than predicted by the impact of
4 the econometric factors alone.

5 **iii. First-Class Advertising**

6 Workshare letter volume has benefitted from increased use of First-Class letters
7 for direct mail advertising. According to *Household Diary Study* data, workshare
8 advertising letter volume increased 115 percent from 1988 to 1997, and rose 50
9 percent from 1992 to 1997. Single-piece advertising letter volume also grew from 1988
10 to 1997, albeit at a slower pace. Still, this suggests that the increase in workshared
11 letter advertising mail primarily represents new letter volume and not simply shifts from
12 single-piece letter mail.

13 In addition, there has undoubtedly been great growth in advertising mail sent to
14 nonhouseholds, data that are not available from the Household Diary Studies. There
15 has been a substantial increase in the nonhousehold-to-nonhousehold segment of
16 letter mail, in which advertising mail undoubtedly plays an important role.

17 **iv. Credit Card Mailings**

18 Another source of increased workshared letter volume has been growth in credit
19 card mailings. These mailings include credit card statements as well as solicitations.
20 According to *Household Diary Study* data, the share of workshared letter volume sent
21 by the credit card industry has risen from about ten percent in 1987, to thirteen percent
22 in 1992, to nearly 18 percent in 1997.

23 According to BAIGlobal, Inc., a market-research firm in Tarrytown, N.Y., credit
24 card solicitation volume increased by 15 percent from 1997 to 1998, reaching an all-

1 time peak of 3.45 billion pieces. In 1992, credit card solicitation volume was less than
2 one billion. Mailings in 1998 are estimated to have generated 41 million applications,
3 which in turn generate more mail as more credit card accounts are opened. [*American*
4 *Banker*, October 5, 1999].

5 The growth in credit card mailing is partly due to the highly competitive nature of
6 the business. Card issuers are making aggressive efforts to encourage consumers to
7 transfer card balances from one company to another, and direct mail remains the most
8 effective medium for reaching cardholders. According to Joseph Cahill of the Wall
9 Street Journal, "Despite high-profile moves by a few issuers to peddle cards over the
10 Internet, direct mail accounted for 76 percent of all applications last year and the
11 Internet only 2 percent." [Cahill, James, "Credit Cards Get A Record Level of
12 Solicitations," *Wall Street Journal*, April 9, 1999].

13 One negative for card issuers is the decline in response rates. The large number
14 of mailings are both a cause and effect of increased mailings. Response rates in 1998
15 were estimated to be only 1.2 percent as compared to 2.8 percent in 1992. BAIGlobal
16 estimates that the number of cards per household fell 11 percent from 1997 to 1999,
17 dropping to 2.5 from 2.8. [*American Banker*, October 5, 1999.]

18 The apparent recent decline in cards per household contrasts with a longer term
19 trend toward greater number of accounts. Data from the US Statistical Abstract show a
20 forty percent increase in the number of credit card accounts in the five years from 1992
21 to 1997. According to the *Household Diary Study*, non-advertising mailings from credit
22 card companies to households more than doubled from 1987 to 1997. In fact, the credit
23 card industry is the only part of the financial sector that has shown rapid growth in mail
24 volumes in the last decade.

2. Volume Forecasts for Total Workshared Letters**a. Before-Rates**

Table 3A shows that the Base Year volume of First-Class workshared letters is 42,684.840 million pieces. Non-rate factors are projected to increase volume by 9.79 percent between the Base Year and the Test Year. If the current postal rate schedule remains in place, rate-effects – primarily the decline in the real level of the workshare discount – are projected to slightly increase workshared letter volume by 0.39 percent. Thus, the before-rates Test Year volume forecast is 47,047.898 million pieces.

Table 3A
Volume Forecast of First-Class Workshare Letters

	Before-Rates	After-Rates
Base Year Volume (Millions)	42,684.840	42,684.840
Non-Rate Impact	9.79%	9.79%
Postal Rate Impact	0.39%	0.25%
Test Year Volume (Millions)	47,047.898	46,979.736

b. After-Rates

The after-rates volume forecast for workshared letters uses the same Base Volume and includes the same non-rate impacts as the before-rates forecast. If rates proposed by the Postal Service in this case are adopted, the real change in the workshared letter price, the workshared letter discount, the price of workshared cards, and the price of Standard A Regular mail combine to increase volume by 0.25 percent between the Base Year and the Test Year. Consequently, the after-rates forecast of First-Class workshared letters is 46,979.736 million pieces, as shown in Table 3A.

3. Volume Forecasts for Nonautomated Presort Letters

In the Test Year, the projected before-rates volume of nonautomated presort letters is 2,930.521 million pieces. In the after-rates scenario, the estimated volume of nonautomated presort First-Class letters is 2,586.288 million pieces.

4. Volume Forecasts for Automated Letters

The projected before-rates volume of automated First-Class letters is 44,117.377 million pieces. The projected after-rates volume of automated letters in the Test Year is 44,393.448 million pieces. The after-rates volume is greater than the before-rates volume due to a shift of nonautomated presort letters into automated letters in response to the proposed decline in the presort discount. The proposed increase in Standard A mail rates also causes some volume to shift to First-Class workshared letters.

E. Stamped cards

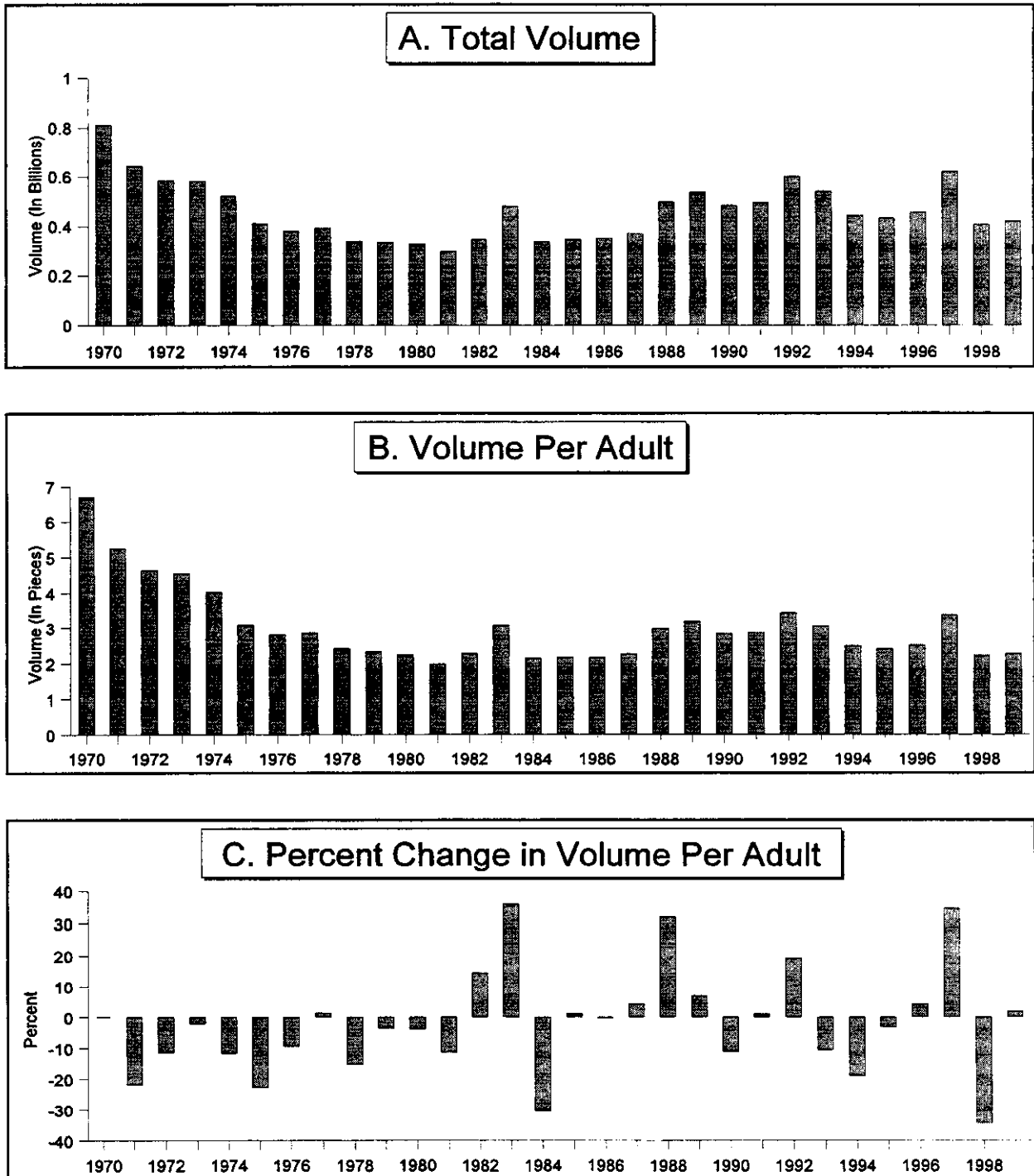
1. Definition

Stamped cards are postcards sold by the Postal Service with the postage imprinted. Prior to R97-1, stamped cards were sold for the price of the postage only. At present, there is a one cent surcharge above the rate for a private single-piece card. The preponderance of postcards are not stamped cards, which accounted for less than ten percent of total card volume in 1999.

2. Volume History

As shown in Figure 4, the total volume of stamped cards declined in the 1970s, increased in the 1980s, and fell again from 1990 to 1999. Total volume was 812.5 million in 1970, 329.8 million in 1980, 484.4 million in 1990 and 420.3 in 1999. Volume is erratic as evidenced by the wide variation in the percent change in volume per adult.

Figure 4
Stamped Cards



3. Factors Affecting Volume

a. Own Price

Table 4 shows that the real price of stamped cards decreased by 0.3 percent over the past five years. The estimated long-run own-price elasticity of stamped cards volume is -0.761. Applying this elasticity to the 0.3 percent price decline yields a 0.25 percent increase in stamped cards volume.

b. Income

Permanent income, measured on a per adult basis, increased 7.1 percent over the past five years. The estimated elasticity of stamped cards volume with respect to permanent income is 0.708. Therefore, the growth in permanent income contributed 4.94 percent to the volume of stamped cards.

c. Adult Population

Table 4 shows that growth in adult population added 4.65 percent to the volume of First-Class stamped cards.

TABLE 4
CONTRIBUTIONS TO CHANGE IN
STAMPED CARDS VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	-0.3%	-0.761	0.25%
Permanent Income	7.1%	0.708	4.94%
Adult Population	4.66%	1	4.66%
Other Factors			-15.18%
Total Change in Volume			-5.34%

d. Other Factors

Table 4 shows that other factors were responsible for a 15.18 percent decline in stamped cards volume. To some extent, this decline is due to the R97-1 decision to price stamped cards differently from single-piece cards. Previously, mailers only had to pay for postage as there was no extra charge for the stamped card. This change in pricing strategy would be expected to reduce stamped cards volume.

However, econometric attempts to measure the extent that stamped cards volume was affected by the change in pricing strategy were unsuccessful. The volume change did not occur immediately after the price change, but declines in volume were witnessed both before and after implementation of the R97-1 rates. Nonetheless, since volume forecasts are made from a base volume, and the base volume of stamped cards includes this recent decline, the factors contributing to the decline are imbedded in the volume forecast.

4. Volume Forecasts

Table 4A shows the before- and after-rates volume forecasts of stamped cards. In the before-rates projection, non-rate factors add approximately 4.38 percent to volume between the Base Year and the Test Year. The decline in the real price of stamped cards over that same time period contributes 1.63 percent to volume, yielding a before-rates Test Year forecast of 445.823 million pieces.

In the after-rates scenario, the proposed increase in the price of stamped cards reduces volume by 5.20 percent between the Base Year and the Test Year. As shown in Table 4A, this leads to an after-rates Test Year forecast of 415.873 million pieces.

Table 4A
Volume Forecast of First-Class Stamped Cards

	Before-Rates	After-Rates
Base Year Volume (Millions)	420.287	420.287
Non-Rate Impact	4.38%	4.38%
Postal Rate Impact	1.63%	-5.20%
Test Year Volume (Millions)	445.823	415.873

F. Private Cards

1. Definition

Private cards differ from stamped cards in that they are privately printed and distributed, and they require that the mailer provide postage. Private cards are used for short notices and greetings and are sent by households, respondents to firms that engage in business-reply advertising, utility companies and other firms. The current price for mailing a nonpresorted private card is 20 cents

2. Volume History

a. Total Volume of Private Cards

As can be seen in Figure 5, private cards volume has behaved somewhat similarly to First-Class letter volume (shown in Figure 2) in that per adult volume declined in the early 70s and then picked up, with quite vigorous growth in the 80s. The movements for cards have been more pronounced than for letters.

Volume was 13.7 pieces per adult in 1970, and ranged between 12.7 and 14.5 pieces per adult throughout the 1970s. From 1980 to 1991, volume per adult almost doubled, rising from 13.8 pieces to 26.8 pieces. Much of this rise occurred from 1987 to 1991 as a result of the R87-1 rate changes which resulted in Presort cards being priced less than Presort third bulk regular. Private cards were again priced more expensively than third bulk regular after the R90-1 rate case, and volume per adult has remained fairly constant since then.

b. Volumes of Single Piece and Workshared Cards

Chart D presents single-piece and workshared volumes of total cards since 1984. Chart D shows the impact of the R87-1 pricing of presort cards less than third-class regular mail, with workshared cards rising from 28.5 percent of total private cards in 1987 to 45.5 percent in 1991. In 1992, workshared cards volume declined as presort cards were priced more expensively than third-class regular mail in the R90-1 case. Since 1992, the percentage of total private cards that are workshared (presorted or automated) has increased in each year so that in 1999, the volume of workshared private cards exceeded the volume of single-piece private cards.

Figure 5
Private Cards

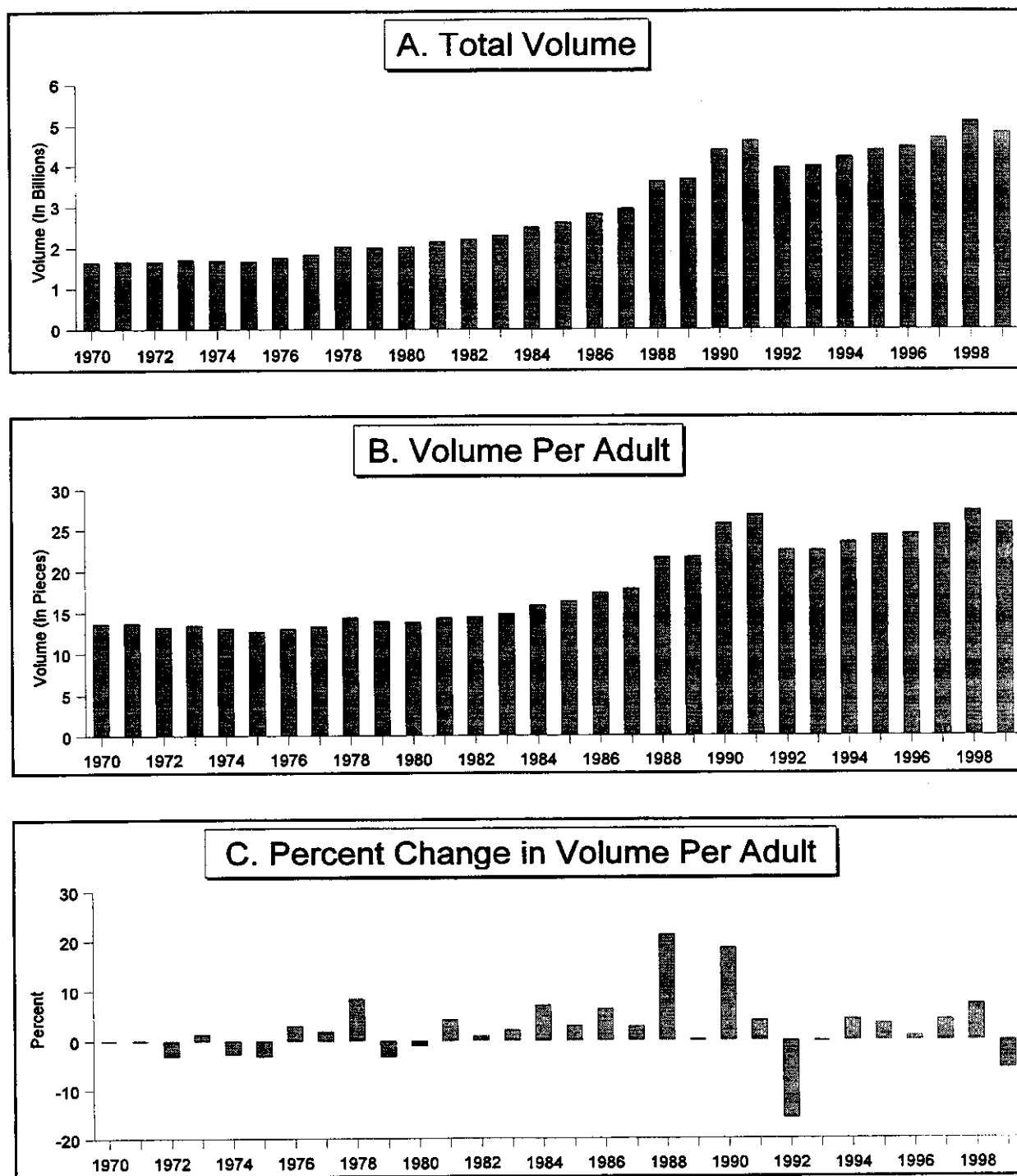


Chart D**Single-Piece and Workshared Volumes of Private First-Class Cards**

(in millions of pieces)

	Single Piece		Workshared	
Year	Volume	Percentage	Volume	Percentage
1984	1,798.166	71.9%	703.246	28.1%
1985	2,001.836	76.5%	613.495	23.5%
1986	2,009.369	71.1%	815.431	28.9%
1987	2,105.437	71.5%	839.475	28.5%
1988	2,524.109	69.9%	1,089.185	30.1%
1989	2,437.418	66.6%	1,224.487	33.4%
1990	2,799.608	63.8%	1,591.745	36.2%
1991	2,519.904	54.5%	2,101.385	45.5%
1992	2,443.237	62.0%	1,494.472	38.0%
1993	2,386.223	59.9%	1,595.745	40.1%
1994	2,425.963	57.8%	1,770.973	42.2%
1995	2,401.699	54.8%	1,981.619	45.2%
1996	2,412.798	54.0%	2,057.333	46.0%
1997	2,424.834	51.6%	2,273.822	48.4%
1998	2,557.046	50.3%	2,523.261	49.7%
1999	2,414.013	49.8%	2,433.524	50.2%

3. Factors Affecting Volume**a. Own Price**

The real price of private cards decreased by 5.7 percent from 1994 to 1999. That price increase combined with an econometrically estimated own-price elasticity of -0.860 results in a 5.20 percent increase in volume of private cards from 1994 to 1999, as shown in Table 5.

b. Cross Price

The volume of private cards is affected by the price of a First-Class letters, which serve as a substitute for card mail. The estimated cross-price elasticity between the volume of First-Class cards and the price of First-Class letters is 0.228. Applying this estimated elasticity to the 1.1 percent increase in First-Class letter price over the past five years yields a 0.25 percent increase in volume.

c. Income

Table 5 shows that the elasticity of private First-Class card volume with respect to real permanent income per adult is 0.694. Therefore, the 7.1 percent increase in permanent income from 1994 to 1999 is estimated to increase private card volume by 4.86 percent.

d. Adult Population

Table 5 shows that growth in adult population contributed 4.66 percent to the volume of First-Class private cards over the past five years.

e. Z-variable

Figure 5 shows that private card volume per adult has increased for most of the past 30 years. Much of this increase in volume per adult is explained by changes in income and postal prices, but other factors has also been contributing to private card volume growth. Accordingly, an econometrically estimated Z-variable is included in the demand equation. The Z-variable, also known as a market penetration variable, reflects the growth of volume as more and more mailers, particularly advertising mailers, have found First-Class cards to be an attractive postal option.

Table 5 shows that the Z-variable contributed 2.17 percent to the volume of First-Class private cards over the 1994 to 1999 period.

TABLE 5
CONTRIBUTIONS TO CHANGE IN
PRIVATE FIRST-CLASS CARDS VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	-5.7%	-0.860	5.20%
Cross Price First-Class Letters	1.1%	0.228	0.25%
Permanent Income	7.1%	0.694	4.86%
Adult Population	4.66%	1	4.66%
Z-Variable			2.17%
Other Factors			-1.64%
Total Change in Volume			15.50%

f. Other Factors

Table 5 shows that from 1994 to 1999, the total change in the volume of First-Class private cards was 15.50 percent. Other factors not included in the demand equation of First-Class cards contributed a 1.64 percent decline in volume of First-Class private cards.

First-Class card volumes are affected by many of the same factors as First-Class letters. Electronic diversion has probably had an adverse impact on single-piece card volumes in recent years, while growth in advertising has bolstered card volumes, particularly for workshared cards. *Household Diary Study* data from 1992 to 1997 show substantial increases in the volume of cards received by households from the financial industry while volumes received from merchants have declined.

1 Many First-Class mailers are shifting toward the use of advertising enclosed, or
2 “stuffers,” as alternatives to cards. Advertising “stuffers” are included with a regular
3 First-Class letter mailing, such as a bill or bank statement. This option is not available
4 for mailers of private cards. Credit card companies, banks, and department stores are
5 the industries most likely to include stuffers along with other mail, according to the
6 *Household Diary Study*. In 1997, these three industries generated a combined 0.64
7 pieces per household per week of First-Class advertising mail that is sent enclosed with
8 other items. Given 98.3 million households, this implies that “stuffer” volume amounted
9 to 3.3 billion pieces in 1997.

10 A particularly important recent development is the different volume patterns of
11 single-piece and workshared cards. Chart D shows that from 1994 to 1999, the volume
12 of single-piece cards remained at about 2.4 billion pieces. Workshare cards volume, on
13 the other hand, increased from less than 1.8 billion pieces to more than 2.4 billion
14 pieces, an average annual growth rate of more than 6.5 percent. These different
15 volume trends suggest that the non-econometric factors are influencing single-piece
16 and workshare volumes differently, and the forecasting approach takes this into
17 consideration.

18 4. Volume Forecast

19 a. Total Private Cards

20 The before-rates forecast for total private cards is 5,584.931 million pieces in the
21 GFY 2001 Test Year. At rates proposed by the Postal Service, the Test Year volume is
22 projected to be 5,440.951 million pieces. Both the before-rates and after-rates volume
23 forecasts are sums of separate forecasts of single-piece and workshared cards.
24 Examination of recent volume trends provides strong evidence that single-piece and
25 workshared cards have experienced different volume growth rates in recent years and

1 this difference was taken into account in making separate forecasts of these two
2 categories of First-Class cards.

3 Econometric efforts to estimate separate demand equations for single-piece and
4 workshared cards, as was done for First-Class letters, did not yield acceptable results.
5 Therefore, separate volume forecasts are made for single-piece and workshared
6 letters, combining the impact of the econometric factors with the impact of the non-
7 econometric factors.

8 **b. Single Piece Private Cards**

9 The Test Year volume forecast of single-piece private cards is made by
10 projecting the impact of changes in the econometric and non-econometric factors
11 between the Base Year and the Test Year. The impact of non-econometric factors is
12 measured by a five-year mechanical net trend of 0.963773, (see Table A-7 in the
13 Technical Appendix) which is equivalent to a volume decline of about 3.66 percent (1 -
14 0.963773) per year. That is, over the past five years, non-econometric factors were
15 responsible for an average annual volume decline in First-Class single-piece private
16 cards volume of 3.66 percent. It is projected that these non-econometric factors will
17 continue to have the same influence on single-piece cards in the future as they have
18 had in the recent past. Therefore, an annual net trend of 0.963773 is included in the
19 volume forecast of single-piece cards.

20 Table 5A shows that between the Base Year and the Test Year, non-rate
21 factors (which include the net trend factor discussed immediately above) reduce volume
22 by 2.76 percent while the decline in real rates increases volume by 2.46 percent.
23 Consequently, the before-rates Test Year volume of single-piece private cards is
24 projected to equal 2,405.027 million pieces. Table 5A also shows that if the rates

proposed by the Postal Service are adopted, including the proposed rates for First-Class letters, then the after-rates volume is projected to equal 2,354.910 million pieces.

Table 5A
Volume Forecast of First-Class Single-Piece Cards

	Before-Rates	After-Rates
Base Year Volume (Millions)	2,414.013	2,414.013
Non-Rate Impact	-2.76%	-2.76%
Postal Rate Impact	+2.46%	+0.32%
Test Year Volume (Millions)	2,405.027	2,354.910

c. Total Workshared Cards

Table 5B shows that the volume forecasts for workshared cards are made from a Base Year volume of 2,433.524 million pieces. As was done with single-piece cards, the volume forecasts of workshared cards include an annual net trend factor to take account of the impact of non-econometric factors between the Base Year and the Test Year. Table A-8 in the Technical Appendix shows that the five-year mechanical net trend for workshared cards is 1.020598. This means that over the past five years, non-econometric factors contributed about two percent per year to the volume of workshared cards. It is projected that these non-econometric factors will have the same influence on volume between the Base Year and the Test Year. Therefore, the volume forecast of workshared cards included an annual net trend factor of 1.020598.

Table 5B shows that in the before-rates forecast of workshared cards, non-rate factors (including the annual net trend) contribute 9.56 percent to volume and the decline in real postal rates adds 2.55 percent to volume. Therefore, the before-rates Test Year volume of workshared private cards is projected to equal 2,734.081 million

pieces. In the after-rates scenario, which includes the impact of the proposed rates for workshared cards and letters, volume is projected to equal 2,670.168 million pieces.

Table 5B
Volume Forecast of First-Class Workshared Cards

	Before-Rates	After-Rates
Base Year Volume (Millions)	2,433.524	2,433.524
Non-Rate Impact	9.56%	9.56%
Postal Rate Impact	2.55%	0.15%
Test Year Volume (Millions)	2,734.081	2,670.168

d. Presorted and Automated Private Cards

Within workshared cards, the before-rates volume of presorted nonautomated cards is projected to be 400.483 million pieces in the Test Year, with an after-rates volume equal to 383.715 million pieces. The total volume of automated cards is projected to equal 2,333.598 million pieces, before-rates, in the Test Year. At rates proposed by the Postal Service, the Test Year total volume of automated cards is projected to decrease to 2,286.453 million pieces.

III. MAILGRAMS

A. Characteristics

Mailgrams are offered pursuant to an agreement between Western Union and the Postal Service, and provides for delivery by the Postal Service of messages generated and printed by Western Union. Western Union reimburses the Postal Service for each message.

B. Volume History

As shown in Figure 6, Mailgrams volume is characterized by steady declines, although recent years have shown volume increases. Volume per adult peaked at 0.28 pieces in 1981 and has fallen to 0.024 pieces per adult in 1999.

C. Factors Affecting Volume

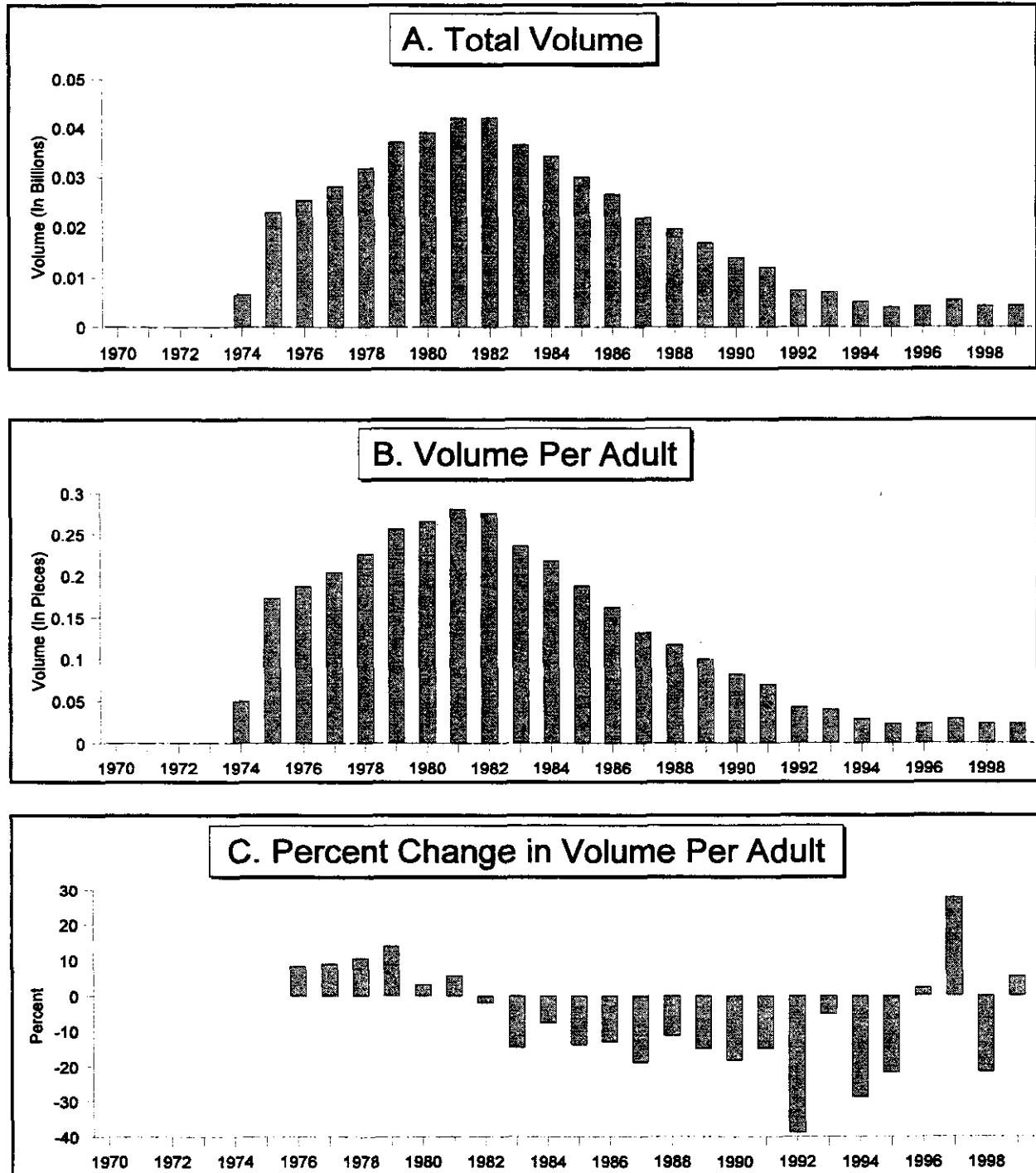
a. Adult Population

Mailgrams volume is estimated on a per adult basis so the 4.66 percent increase in adult population over the last five years adds an equal percentage to Mailgrams volume.

TABLE 6
CONTRIBUTIONS TO CHANGE IN
MAILGRAMS VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Adult Population	4.66%	1	4.66%
Other Factors			-20.98%
Total Change in Volume			-16.32%

Figure 6
Mailgram Volume



b. Other Factors

Table 6 shows that other factors, primarily measured by an econometric time trend, were responsible for a 20.98 percent decline in Mailgrams volume over the past five years.

D. Volume Forecast

Examination of Figure 6 shows that the recent slowdown in the decline in Mailgrams volume was due to an unusual increase in volume in 1996. The unusual recent increase in Mailgrams volume is reflected in the base volume from which the Mailgrams volume forecast is made. In the forecast, shown in Table 6A, Mailgrams volume declines according to an econometrically estimated time trend. Volume is expected to decline from a Base Year volume of 4.306 million pieces to a Test Year volume of 3.340 million pieces. As there is no proposed change in rates, the after-rates and the before-rates volume forecasts are the same.

Table 6A
Volume Forecast of Mailgrams

	Before-Rates	After-Rates
Base Year Volume (Millions)	4.306	4.306
Non-Rate Impact	-22.4%	-22.4%
Postal Rate Impact	nil	nil
Test Year Volume (Millions)	3.340	3.340

IV. Periodicals

A. General Characteristics

1. Periodicals as Source of Information

Periodicals consists of newspapers, magazines, and other periodicals. Nearly all Periodicals originate in the nonhousehold sector. The *Household Diary Study* results for 1997 show that 56.1 percent of all Periodicals were sent to households. This value is lower than the 1991 value of 77.8 percent. (*Household Diary Study*, 1997 p. V-1 and 1991 p. V-1).

Periodicals are used solely by the publishers and registered agents of newspapers, magazines, and other periodical publications which meet the qualifications of the Domestic Mail Manual. To qualify for Periodicals rates the material to be mailed must be printed and issued regularly (at least four times per year). Periodicals are published for the purpose of disseminating information of a public character, such as news, or are devoted to literature, the sciences, arts, or some special industry. Also to qualify for Periodicals rates, there must be a list of subscribers paying for or requesting the periodical, though exemptions are given for some organizations if there is no advertising other than that of the publisher. Publications consisting of over 75 percent advertising in more than half of the issues published in 12 months are not eligible for Periodicals rates. Periodicals are given expeditious distribution, dispatch, transit handling and delivery, preceded only by First-Class, Priority Mail and Express Mail.

Prior to the effective date of R84-1 rates on February 17, 1985, the general public could send single copies of Periodicals material at a special transient rate. This rate represented an exception to bulk mail and was at the time less expensive than third- or fourth-class rates. However when the R84-1 third- and fourth-class rates became effective, the Periodicals transient rate became redundant given lower price

1 postal alternatives and was eliminated. Thus, all current Periodicals are bulk and must
2 be presorted to at least the ZIP Code level.

3 **2. Importance of Periodicals**

4 In Postal Year 1999, the total volume of Periodicals was just over ten billion
5 pieces, accounting for about five percent of total mail volume handled. The largest
6 subclass of Periodicals is Regular rate mail, which had a 1999 volume of 7,206 million
7 pieces, followed by Nonprofit mail (2,137 million pieces), In-county mail (894 million
8 pieces) and Classroom mail (60 million pieces).

9 **3. Rate Structure of Periodicals**

10 **a. In-County vs. Outside-County Rates**

11 In-county rates are available for qualified Periodicals pieces which are addressed
12 for delivery within the county where published. All Periodicals volume mailed in-county
13 is charged rates which are lower than rates for similar mail traveling outside the county.
14 As a result, the rates charged to mail traveling outside the county are referred to
15 collectively as outside-county rates.

16 **b. Further Pricing Classifications**

17 The charge for Periodicals consists of a per piece rate charge plus a pound rate
18 charged for the weight of that piece. The pound rate is further separated into a flat (not
19 zoned) rate for editorial (non-advertising) portions of the publication and a zoned rate
20 for advertising portions. The piece rate has several levels depending on the degree of
21 presortation and destination characteristics. The rate structure is further affected by the
22 fact that the preferred rate elements were subject to congressionally mandated phase-
23 ins to higher rates, and that each component has sometimes followed a different
24 phasing schedule. The routine phasing schedule was frequently altered in response to

1 congressional appropriations. As a result, preferred rates experienced frequent rate
2 changes.

3 **B. Within-County Mail**

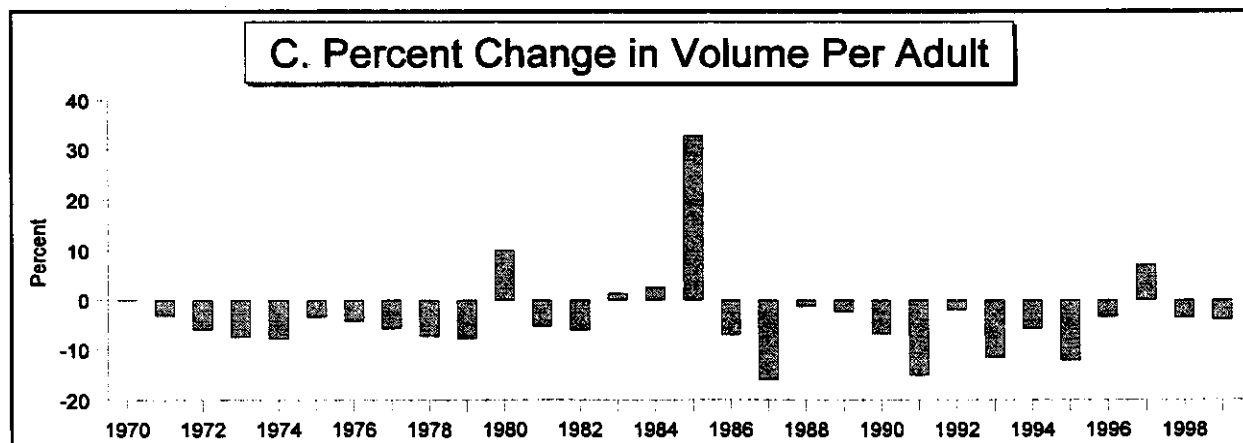
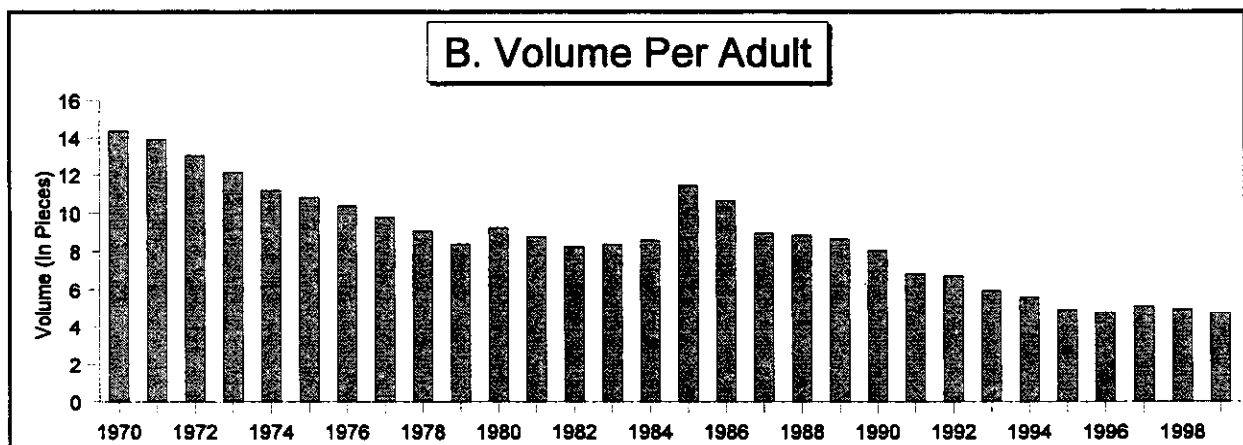
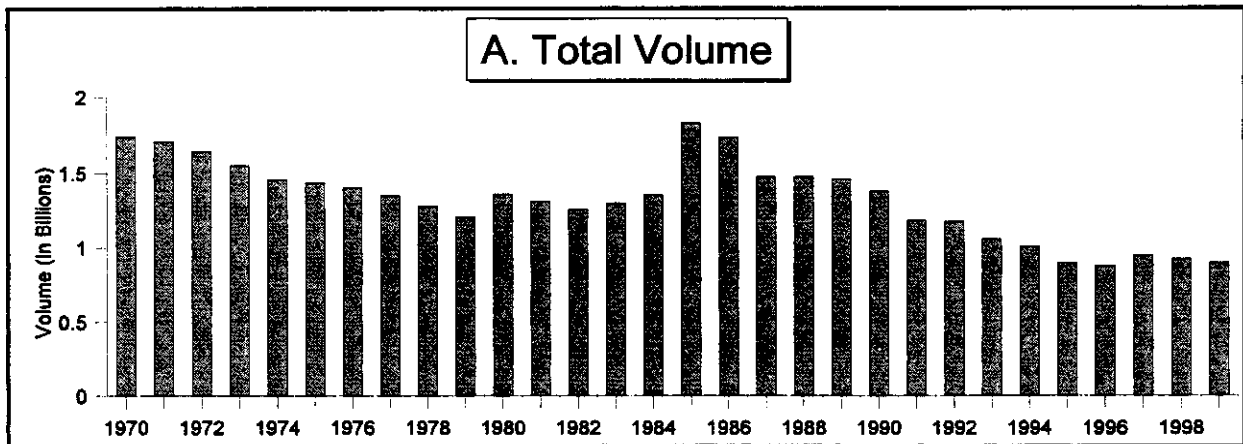
4 **1. Definition**

5 The first requirement for mail to be eligible for in-county rates is that it must
6 qualify under the general rules regarding Periodicals. The second requirement is that
7 the piece must be addressed to a location within the county where the mailer has a
8 known office of publication. In 1985, Congress moved to tighten the requirements for
9 in-county mail. The Consolidated Omnibus Budget Reconciliation Act of 1985 (Pub.
10 Law 99-0272, April 7, 1986) denies in-county rates to publishers with more than half of
11 their circulation outside of the county, but it specifically exempts publications with
12 circulation of less than 10,000.

13 **2. Volume History**

14 The top panel in Figure 7 shows that total in-county mail volume generally
15 declined or remained flat from 1970 until 1985. The increase in reported volume per
16 adult of over 30 percent in 1985 is connected with new reporting procedures introduced
17 to reconcile volume estimates for the subclasses of what was then second-class mail.
18 Prior to 1985 within-county mail was under reported relative to the other subclasses.
19 The effect of the reporting procedure change was to increase estimated in-county
20 volume, while decreasing the estimated nonprofit and regular rate volumes. After the
21 increase due to the reporting change, volume continued to decline and volume per
22 adult has fallen from 11.4 pieces in 1985 to 4.8 pieces in 1999.

Figure 7
Periodical Within-County Mail



3. Factors Affecting Volume

a. Own Price

Table 7 shows that over the last five years, the real price of in-county mail declined 1.7 percent. The econometrically estimated long-run own-price elasticity of in-county mail is -0.142. Applying this elasticity to the change in real price yields a 0.24 percent increase in the volume of in-county mail due to this factor.

b. Income

Periodicals in-county mail volume has been found to respond positively to long-run income. It is estimated that a one percent increase in long run income increases volume by 0.535 percent. Therefore, the increase in permanent income per adult of 7.1 percent from 1994 to 1999 is estimated to have contributed a 3.74 percent increase in Periodicals in-county mail volume, as shown in Table 7.

c. Adult Population

Growth in adult population contributed 4.67 percent to the volume of in-county mail, as shown in Table 7.

d. Other Factors

As indicated in Figure 7, in-county mail volume has been declining for many years. Table 7 shows that over the past five years, in-county volume declined by 11.15 percent. The total of the effects of price, income and population is to contribute an 8.65 percent increase in volume. To arrive at the observed 11.15 percent decline implies that other factors contributed a 19.8 percent decline. Much of this decline is explained by an econometrically estimated time trend. Table A-9 of my Technical Appendix shows that the five-year mechanical net trend of in-county mail is 0.997514, indicating an average annual decline of only 0.25 percent ($1 - 0.997514$) due to non-econometric factors.

TABLE 7
CONTRIBUTIONS TO CHANGE IN
WITHIN COUNTY VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	-1.7%	-0.142	0.24%
Permanent Income	7.1%	0.535	3.74%
Adult Population	4.66%	1	4.66%
Other Factors			-19.80%
Total Change in Volume			-11.15%

The decline due to other factors is explained in part by long-term changes in newspaper and magazine reading habits. The earlier effects of competition from television are still being felt. Reading by older persons was not as greatly affected by television as it was for younger people. As these older persons pass out of the population, they are replaced by those who due to the earlier influence of introducing television do not read as much. Use of personal computers as an alternative use of time, as well as availability of newspaper and magazine material on the Internet, continue the downward influences on volume.

In-county mail volume has been particularly impaired by declines in newspaper circulation. According to the *1997 Household Diary Study*, newspapers "received (by mail) dropped over the past eleven years from 0.60 to 0.26 pieces per household per week." [U.S. Postal Service, *The Household Diary Study: Fiscal Year 1997*, Volume I, November 1998, p.V-1].

As further evidence, the percentage of adults who read a daily paper dropped to 58.6 percent in 1998, down from 64.8 percent in 1987 ["U.S. Daily and Sunday /Weekend Newspaper Reading Audience," Table 2, Sources: W.R. Simmons & Associates Research Inc. 1970-1977, Simmons Market Research Bureau Inc. 1980-1994, Scarborough Research-Top 50 DMA Market Report, 1995-1998, <http://www.naa.org/info/facts99/02.html> (October 13, 1999)]

Because weekly newspapers tend to be local newspapers, they are more likely than daily newspapers to be mailed at within-county rates. According to the 1997 *Household Diary Study*, pieces per household per week of weekly newspapers dropped from 0.30 in 1987 to 0.14 in 1997 [*Household Diary Study*, Table 5-2].

4. Volume Forecast

The Test Year volume forecast of in-county mail volume is made by applying the impact of the econometric factors to a Base Year volume of 894.488 million pieces. The before-rates Test Year volume forecast is 872.194 million pieces as shown in Table 7A. The after-rates forecast at rates proposed by the Postal Service is 862.061 million pieces.

Table 7A
Volume Forecast of Periodicals In-County Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	894.488	894.488
Non-Rate Impact	-3.07%	-3.07%
Postal Rate Impact	0.60%	-0.57%
Test Year Volume (Millions)	872.194	862.061

C. Nonprofit Mail

1. Definition

Periodicals sent by qualified nonprofit organizations and certain other organizations may be mailed as Periodicals Nonprofit mail. The eight types of eligible nonprofit organizations are religious, educational, scientific, philanthropic (charitable), agricultural, labor, veterans, and fraternal. In addition to these organizations, certain other organizations may send publications at the Periodicals Nonprofit rate if their publication falls into one of the following categories: (1) publications issued by and in the interest of associations of rural electric cooperatives, (2) one publication of the official highway or development agency of the state containing no advertising, (3) program announcements or guides published by an educational radio or television agency of a state or local government, or by a nonprofit educational radio or television station, or (4) one conservation publication published by a state agency which is responsible for management and conservation of the fish or wildlife resources of that state.

The *Preferred Rate Study* conducted by the Postal Rate Commission in 1986 found that 23 percent of second-class nonprofit mail consisted of newspapers and 77 percent consists of magazines. Chart E, taken from the study, shows the distribution of second-class nonprofit mailings by categories of mailers. Nearly 38 percent of publications mailed as nonprofit mail were sent by religious organizations, while over 25 percent were sent by educational organizations.

Chart E
DISTRIBUTION OF PUBLICATIONS AND TOTAL ANNUAL VOLUME
OF PERIODICALS NONPROFIT MAIL
ACROSS MAILING CATEGORIES

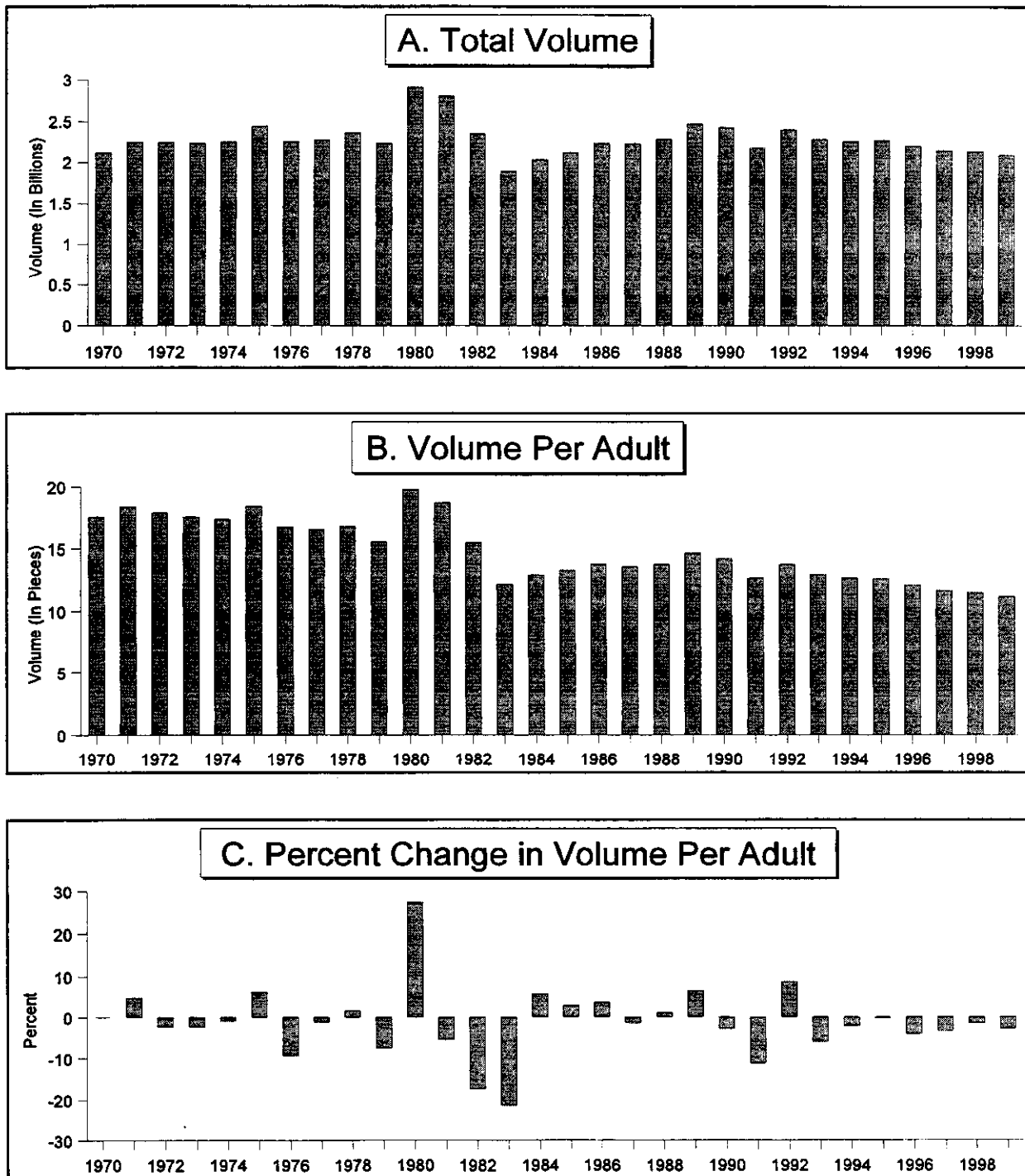
<u>Nonprofit Category</u>	<u>Percent of Publications</u>	<u>Percent of Total Volume</u>
Religious	37.6	30.5
Educational	25.4	22.4
Scientific	12.0	8.3
Philanthropic	0.7	0.6
Agricultural	1.5	1.3
Labor	12.9	19.5
Veterans	0.5	0.3
Fraternal	4.2	2.8
Other & Unknown	5.2	14.3
All Nonprofit	100.0	100.0

Source: *Preferred Rate Study*, Postal Rate Commission, Washington, D.C., 1986

2. Volume History

As shown by the top panel of Figure 8, total nonprofit volume in 1970 was about the same as in 1999. However, as the middle and bottom panels show, because of population growth, this constant total volume led to decreases in volume per adult throughout from 17.5 pieces in 1970 to 11.2 pieces in 1999. Volume per adult has declined in each of the last seven years.

Figure 8
Periodical Nonprofit Mail



3. Factors Affecting Volume

a. Own Price

Table 8 shows that over the last five years, the real price of Periodicals Nonprofit mail increased 22.0 percent. It is estimated that a one percent increase in real own-price leads to a 0.236 percent decline in the volume of nonprofit mail. Applying this estimated elasticity to the percentage change in price yields a decline in nonprofit volume of 4.58 percent.

b. Income

It is estimated that a one percent increase in permanent income per adult leads to an increase in Periodicals Nonprofit mail volume of 0.536 percent. The observed gain in permanent income per adult of 7.0 percent over the past five years is therefore estimated to have contributed a 3.72 percent increase in volume.

Transitory changes in income, measured by the Federal Reserve Board Index of Capacity Utilization, also affect Periodicals Nonprofit mail volume. The response to transitory income is, however, less immediate than with other mail classes. Prepaid subscriptions and memberships (in the case of nonprofit) predominantly generate Periodicals, resulting in a lagged response of approximately three quarters. This three quarter lag results from allowing subscriptions and memberships to lapse during economic downturns, with actual cessation of delivery not occurring until the subscription contracts have run out. Table 8 shows that this lagged index of UCAP increased by 0.7 percent over the past five years. A one percent increase in transitory income is estimated to cause a 0.939 percent increase in nonprofit mail volume. Applying the estimated elasticity to the percentage change in transitory income results in a 0.70 percent increase in the volume of in-county mail.

1 **c. Adult Population**

2 Table 8 shows that growth in adult population contributed 4.66 percent to the
3 volume of Periodicals Nonprofit mail during the most recent five year period.

4 **d. Other Factors**

5 Table 8 shows that factors other than price, income and population contributed a
6 10.14 percent decrease in volume, most of which is explained by an econometrically
7 estimated time trend. The same reading-habit considerations noted for in-county mail
8 have adversely affected nonprofit publications. The lesser decline of nonprofit than in-
9 county mail may be partly explained by the specialty nature of nonprofit publications
10 that are not as greatly affected by competitive media.

11 Another consideration is a possible shift between Standard A and Periodicals
12 mail. Table 13 for Standard A Nonprofit mail shows that this mail subclass
13 experienced an increase in volume due to other factors. It is possible that there has
14 been some shift by nonprofit mailers from Periodicals to Standard A. This shift is not
15 likely to be driven by price changes, as both subclasses experienced real increases in
16 price over the past five years. Since Periodicals and Standard A mail are different
17 products, (e.g., magazines and letters) direct price comparisons are difficult.
18 Nonetheless, changes in the perceived effectiveness of Periodicals and Standard A
19 Nonprofit mail may be responsible for some shifts in volume between these subclasses.

20

TABLE 8
CONTRIBUTIONS TO CHANGE IN
PERIODICALS NONPROFIT VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	22.0%	-0.236	-4.58%
Income			
Permanent	7.0%	0.536	3.72%
Transitory (Lag 3)	0.7%	0.939	0.70%
Adult Population	4.66%	1	4.66%
Other Factors			-10.14%
Total Change in Volume			-5.64%

4. Volume Forecast

Table 8A presents the before- and after-rates Test Year forecasts for Periodicals Nonprofit Mail. In each forecast, non-rate factors reduce volume by 1.74 percent between the Base Year and the Test Year. In the before-rates forecast, the rate impact reduces volume by 0.17 percent because the Test Year real rates are actually higher than the Base Year real rates because the Base Year rates are a mix of R97-1 rates and the rates that prevailed before R97-1 took effect. Combining these two impacts yields a Test Year before-rates volume forecast of 2,095.809 million pieces.

In the after-rates forecast, the proposed rates are projected to reduce Periodicals Nonprofit mail volume by 2.25 percent between the Base Year and the Test Year, yielding a volume forecast of 2,052.208 million pieces.

Table 8A
Volume Forecast of Periodicals Nonprofit Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	2,136.552	2,136.552
Non-Rate Impact	-1.74%	-1.74%
Postal Rate Impact	-0.17%	-2.25%
Test Year Volume (Millions)	2,095.809	2,052.208

D. Classroom Mail

1. Definition

Classroom mail consists of religious, educational or scientific publications intended for use in school classrooms. This mail is often sent to schools in large bundles during the school year, but mailed to individual students during the summer recess.

2. Volume History

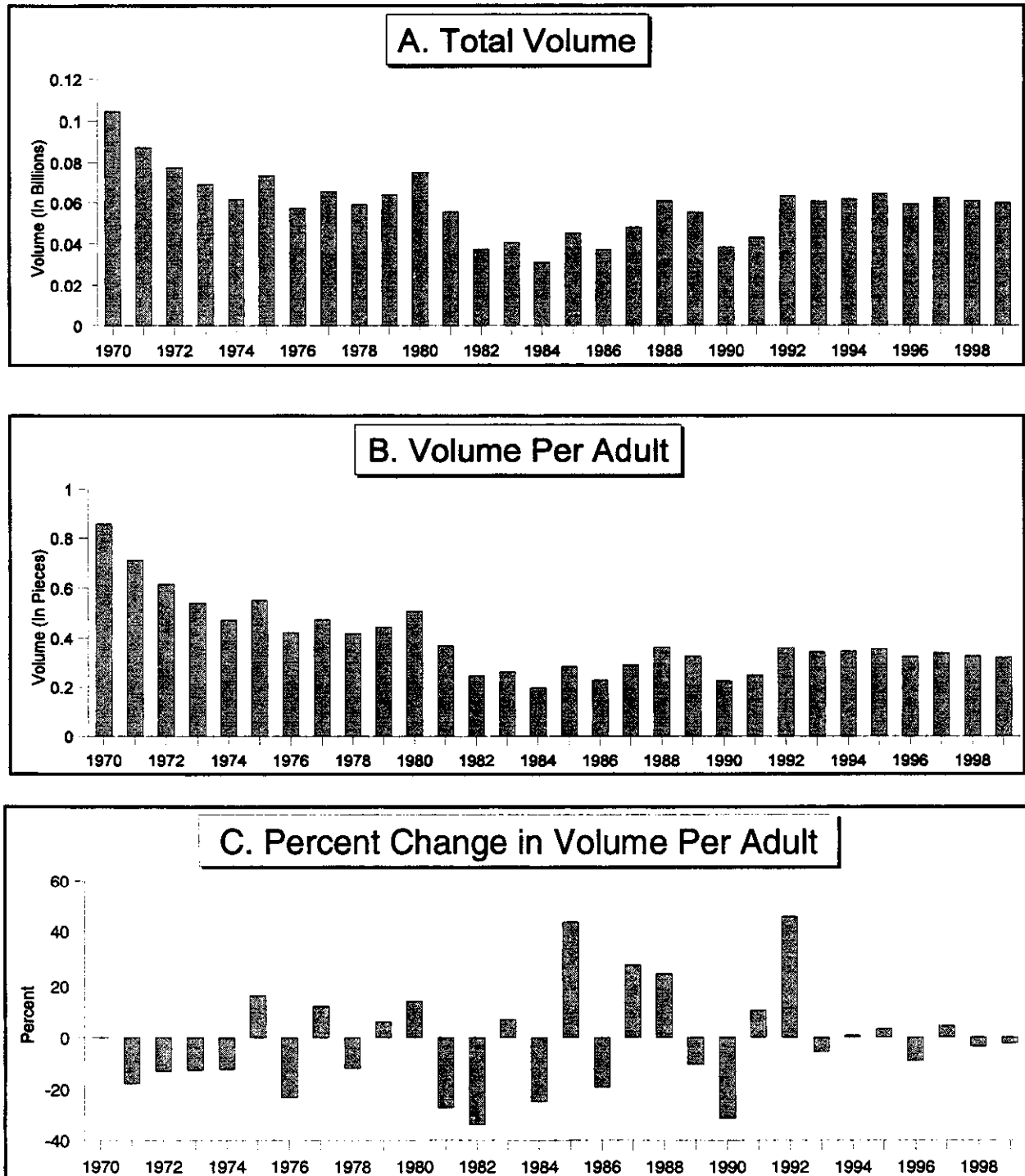
Figure 9 shows that classroom mail volume has shown considerable variation since 1970, although over the last few years volume has been more stable. Volume ranged from 104.5 million pieces in 1970 to 31.1 million pieces in 1984. In 1999, volume was 59.8 million pieces.

3. Factors Affecting Volume

a. Own Price

Table 9 shows that between 1994 and 1999, the real postal price of classroom mail increased 22.1 percent. The own-price elasticity of classroom mail is estimated to be -0.410. Applying this estimated elasticity to the increase in real price results in an 7.84 percent decrease in the volume of classroom mail.

Figure 9
Periodical Classroom Mail



b. Income

It is estimated that a one percent increase in permanent income per adult leads to a 0.536 percent increase in classroom mail volume. The observed gain in permanent income per adult of 7.1 percent from 1994 to 1999 is estimated to have contributed a 3.72 percent increase in classroom mail volume.

c. Adult Population

Growth in adult population was responsible for a 4.66 percent increase in the volume of classroom mail over the past five years.

TABLE 9
CONTRIBUTIONS TO CHANGE IN
PERIODICALS CLASSROOM VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	22.1%	-0.410	-7.79%
Permanent Income	7.1%	0.536	3.72%
Adult Population	4.66%	1	4.66%
Other Factors			-3.71%
Total Change in Volume			-3.12%

d. Other Factors

As shown in Table 9, other factors contributed a 3.71 percent decline in volume. Negative influences are sufficient to more than offset increasing school enrollment. According to the U.S. National Center for Education Statistics [U.S. Bureau of the Census, *Statistical Abstract of the United States: 1998*, Table 250], enrollment in public

1 and private elementary schools grew from 60.3 million in 1990 to 64.8 million in 1995, a
2 growth rate of 7.5 percent. Total school enrollment is projected to grow to 68.7 million
3 by year 2001, a 6.0 percent increase from 1995 estimated levels.

4 As a negative influence on classroom volume, public school Internet access has
5 grown from 35 percent of school in 1994 to a projected 95 percent by 2000. Computer
6 availability in public schools has grown from one computer per 62.7 in 1984-85 to one
7 computer per 6.4 students 1997-98 [*Statistical Abstract*, Table 281].

8 4. Volume Forecast

9 Table 9A shows that the before-rates volume forecast for Classroom mail is
10 56.415 million pieces and the after-rates forecast at rates proposed by the Postal
11 Service is 55.089 million pieces.

12 **Table 9A**
13 **Volume Forecast of Periodicals Classroom Mail**

14	Before-Rates	After-Rates
15 Base Year Volume (Millions)	59.816	59.816
16 Non-Rate Impact	-3.19%	-3.19%
17 Postal Rate Impact	-2.58%	-4.87%
18 Test Year Volume (Millions)	56.415	55.089

20 E. Regular Rate

21 1. Definition

22 Periodicals Regular rate mail, the largest subclass in Periodicals, consists
23 primarily of weekly and monthly magazines as well as daily and less frequent
24 newspapers not eligible for preferred rates.

2. Volume History

Figure 10 shows volumes for Periodicals Regular rate mail from 1970 to 1999. The top panel indicates that total volume remained relatively constant through the 1970s. Volume generally increased through the 1980s and reached nearly 7.0 billion pieces in 1991. Since then, total volume has been relatively constant, though it has declined on a per adult basis. In 1999, volume per adult was 38.8 pieces, about the same level as in 1990 and 1980, but about twenty percent less than volume per adult in 1970.

3. Factors Affecting Volume

a. Own price

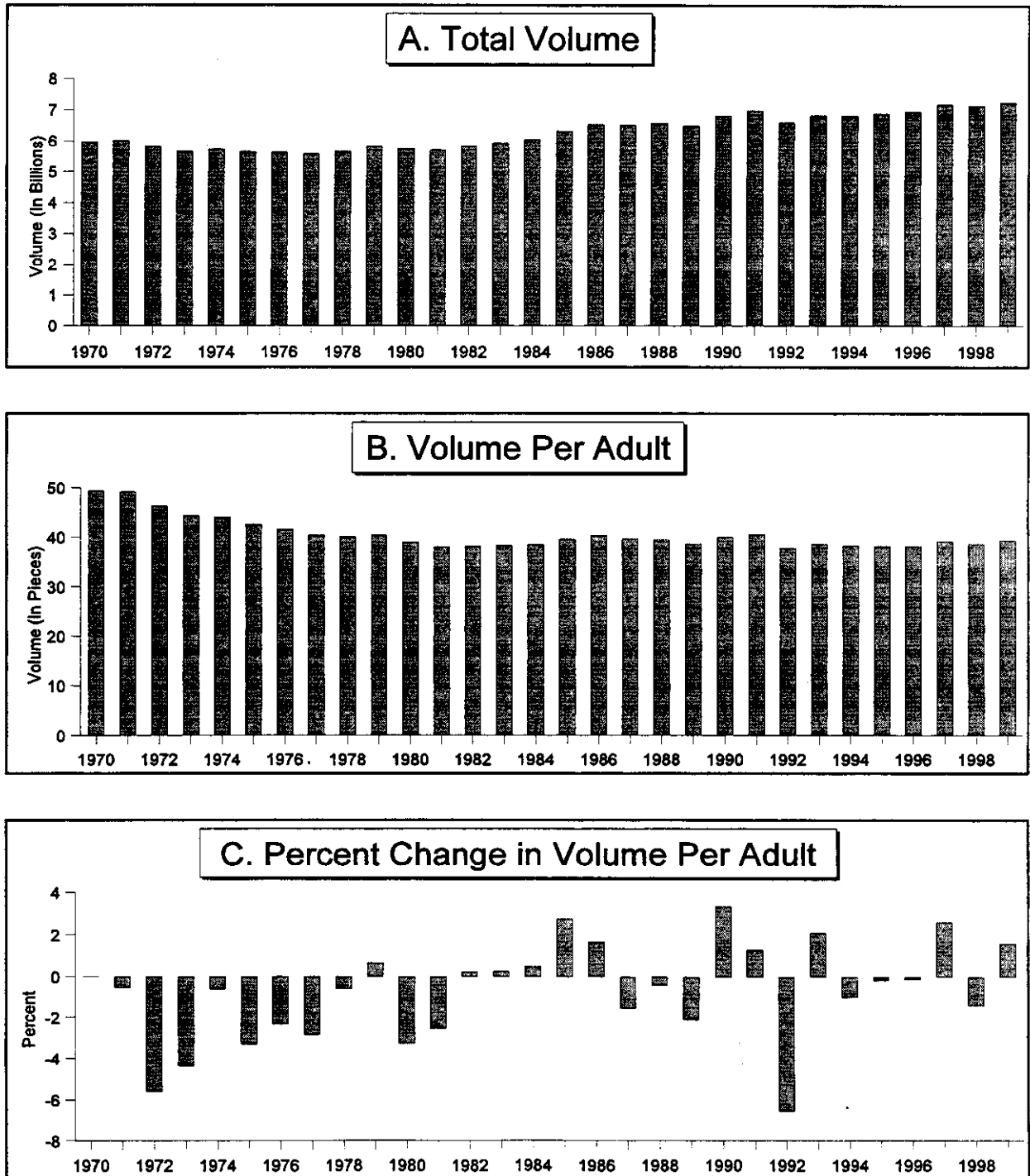
Table 10 shows that the real price of Periodicals Regular rate mail, after allowing for inflation, increased 3.5 percent over the five-year period 1994 to 1999. The estimated own-price elasticity of -0.148 applied to the 3.5 percent increase in real own-price gives an estimated decrease in volume due to price changes of 0.50 percent over the period from 1994 to 1999.

b. Income

Applying the estimated long-run income elasticity of 0.535 to the 7.1 percent gain in permanent income per adult yields a 3.73 percent increase in Periodicals Regular rate volume from 1994 to 1999.

Regular rate mail volume is also somewhat affected by changes in transitory income. As explained in the section on Periodicals Nonprofit mail, the impact of transitory income is lagged three quarters. A one percent change in transitory income lagged three quarters is estimated to cause a 0.033 percent change in Regular rate mail volume. Therefore, as shown in Table 10, transitory income growth of 0.7 percent

Figure 10
Periodical Regular Rate Mail



1 is estimated to have contributed 0.02 percent to the volume of Periodicals Regular rate
2 mail.

3 **c. Wholesale Price of Pulp and Paper**

4 As paper is an important input to newspapers and magazine production, it is not
5 surprising that Regular mail volume should be affected by changes in paper prices. It is
6 estimated that a one percent increase in the wholesale price of pulp and paper index
7 leads to a 0.122 percent decline in the volume of Regular rate mail. Table 10 shows
8 that from 1994 to 1999, the index of pulp and paper prices increased 5.5 percent,
9 producing a 0.65 percent decline in the volume of Regular rate mail.

11 **TABLE 10**
12 **CONTRIBUTIONS TO CHANGE IN**
13 **PERIODICALS REGULAR RATE VOLUME FROM 1994 to 1999**

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	3.5%	-0.148	-0.50%
Income			
Permanent	7.1%	0.535	3.73%
Transitory (Lag 3)	0.7%	0.033	0.02%
Price of Paper	5.5%	-0.122	-0.65%
Adult Population	4.66%	1	4.66%
Other Factors			-1.79%
Total Change in Volume			5.49%

d. Adult Population

Growth in adult population contributed 4.68 percent to the volume of Regular rate mail over the past five years.

e. Other Factors

Table 10 shows that in addition to the impact of the variables discussed above, other factors were responsible for a 1.79 percent decline in the volume of Periodicals Regular mail over the past five years.

The same considerations regarding changes in readership habits noted earlier for within-county and nonprofit mail have also made for a negative contribution of the other factors to regular rate mail. The negative contribution of other factors to regular rate is however less.

As one consideration helping to explain the lesser decline in regular rate volume, the growth of the number of small scale specialty magazines may be a positive influence on regular rate volume. As noted in my testimony for the R97-1 rate case, "Assuming newsstands and distributors find it less profitable to stock specialty magazines, these magazines are more likely to be mailed than general interest publications. This means that Postal Service volume of Periodicals Regular rate mail may rise by servicing the growing demand for specialty titles that may go ignored by wholesale distributors." [USPS-T-6, Docket No. R97-1, at 103]

As another favorable factor helping to explain the lesser decline of Regular rate volume, increases in mailed national newspapers may have contributed to Regular rate volume. For example, the circulation of morning dailies increased from 41.3 million in 1990 to 45.4 million in 1997.

Meanwhile, although increases in Internet publishing have been dramatic in percentage terms and might be thought to be a negative influence, it is not clear that

1 incursions of Internet publishing into mail circulation have been significant. According
2 to *Facts About Newspapers*, 98 of the top 100 newspapers are established online, as
3 are 75 percent of newspapers with circulation of less 50,000; more than 60 percent of
4 newspapers with web sites provide online advertising [Newspaper Voice and Online
5 Services, *Facts About Newspapers*, <http://www.naa.org/info/facts/18.htm> (September 7,
6 1999)]. At the same time, the same source indicates that 82 percent of web news
7 readers also read a newspaper regularly, suggesting a degree of complementarity
8 between Internet presence and print circulation. As a further indication of the limited
9 impact of Internet publishing, only 16 hours were spent per person per year on the
10 Internet in 1996, the latest year for which substantiated figures are available [US,
11 Bureau of the Census, *Statistical Abstract of the United States: 1998*, Table 914]. Not
12 all time on the Internet is spent reading periodicals, and the time spent on the Internet
13 could be more at the expense of TV and radio, for example, than reading of hard copy
14 periodicals.

15 4. Volume Forecast

16 The volume forecasts for Periodicals Regular rate mail are made from a Base
17 Year volume of 7,205.661 million pieces. Table 10A shows that other factors serve to
18 increase volume by 3.09 percent between the Base Year and the Test Year. In the
19 before-rates forecast, the postal rate impact is slightly negative because the Test Year
20 real price of Regular rate mail is greater than the Base Year price, which is a mix of the
21 R97-1 and R94-1 rates. Combining the non-rate and rate impacts results in a before-
22 rates Test Year volume of 7,410.104 million pieces.

23 If the rates proposed by the Postal Service are adopted, then the volume
24 projection is 7,351.808 million pieces, which is the after-rates Test Year forecast for
25 Periodicals Regular rate mail.

Table 10A
Volume Forecast of Periodicals Regular Rate Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	7,205.661	7,205.661
Non-Rate Impact	3.09%	3.09%
Postal Rate Impact	-0.24%	-1.03%
Test Year Volume (Millions)	7,410.104	7,351.808

V. STANDARD A MAIL

A. General Characteristics

1. Description of Standard A Mail

Standard A Mail is mostly printed advertising, solicitation, and promotional materials and also small parcels. Standard A includes matter not required to be mailed First-Class, and is subject to postal inspection. All Standard A must weigh less than 16 ounces, as opposed to Standard B Mail which can weigh in excess of one pound.

Printed advertisements sent as Standard A mail come in a wide variety of forms, from single page advertising circulars to multi-page color catalogs. Businesses, running from the very small to the extremely large, are the primary senders of Standard A mail. The scope of mailings also covers a wide range. High volume mailers may advertise a product in a Standard A mailing to every known household in the country while a local business may use this same service to reach selected business prospects within a single ZIP Code area.

Standard A mail may be deferred at postal facilities in order to expedite the delivery of classes such as Periodicals and First-Class mail. To minimize the effect of deferred status, some large volume Standard A mailers go to extra lengths to reduce the amount of handling needed before their mail is delivered to its final destination.

2. Importance of Standard A Mail

Standard A mail is the second largest class of mail, behind First-Class. In Postal Year 1999, total volume of Standard A mail was 85.2 billion pieces, accounting for more than 40 percent of all domestic mail. The two largest subclasses of Standard A mail are Regular and Enhanced Carrier Route (ECR), with Regular mail volume in 1999 of 38.5 billion pieces and ECR volume of 32.8 billion pieces. There is a nonprofit subclass corresponding to each of the regular rate subclass. The 1999 volume of the

1 Standard A Nonprofit subclass was 10.9 billion pieces and the volume of the Standard
2 A Nonprofit ECR was 2.9 billion pieces.

3 The Standard A single-piece subclass was discontinued as part of the R97-1 rate
4 case. Small volumes of this subclass from the first two postal quarters of 1999 (before
5 R97-1 went into effect) are included in the total volume of Standard A mail in 1999. No
6 volume forecast is made for this subclass in the present testimony.

7 **B. Standard A Regular**

8 **1. Definition**

9 The Standard A regular subclass was created as part of the MC95-1
10 classification reform. Standard A regular mail essentially consists of what was
11 previously known as noncarrier-route third-class bulk regular mail. To qualify for the
12 Standard A regular subclass, mailings must be at least 200 pieces (or 50 pounds)
13 presorted to at least the 3-digit ZIP Code. To be sent Standard A, each piece must
14 weigh less than one pound. Pieces in excess of one pound can be sent as Standard B
15 mail.

16 Within Standard regular, there is a distinction between letter and nonletter mail,
17 where nonletters consist of flats, parcels, and irregularly shaped pieces. There are five
18 letter and four nonletter categories of regular mail. The five letter categories are: basic,
19 presort, basic automation, 3-digit automation, and 5-digit automation. The four
20 nonletter categories are: basic, presort, basic automation, and 3/5-digit automation. To
21 qualify for the automation discounts, mail must be automation compatible and 100
22 percent delivery point barcoded.

23

24

25

2. Volume History

a. Total Volume

The MC95-1 classification reform established the regular and enhanced carrier route subclasses of Standard A mail. Prior to those reforms, what is now the regular subclass of Standard A mail was known as third-class noncarrier-route mail. Figure 11 shows the total volume of noncarrier-route third-class bulk regular mail from 1970 through 1999. Volume increased from just under 15 billion pieces in 1970 to 18.6 billion pieces in 1978. In 1979, the carrier-route presort discount was introduced in third-class, and the volume of noncarrier-route mail fell to under 14 billion pieces in 1982. Since 1982, the volume of noncarrier-route third-class mail has grown in every year except 1989 and 1991. Total volume was 38.5 billion pieces in 1999, up from 34.8 billion in the prior year, partly because of a price restructuring that caused some carrier-route mail volume to shift into noncarrier-route.

Figure 11 shows that on a per adult basis, the volume of what is now Standard A regular mail reached 2006 pieces in 1999, more than twice the level of early 1980s. Since 1982, when volume per adult fell below 90 pieces, volume per adult has grown by an average of five percent per year.

b. Nonautomated and Automated Volumes

Chart F presents the breakdown of total noncarrier-route mail volume into nonautomated and automated volumes since the introduction of the ZIP + discount in 1988. Automation volume has grown in every year, with particularly large increases in the automation occurring after the implementation of the R90-1, R94-1, and MC95-1 rates. In 1999, 83.6 percent of noncarrier-route bulk mail volume was automated.

Figure 11
Standard Regular Mail

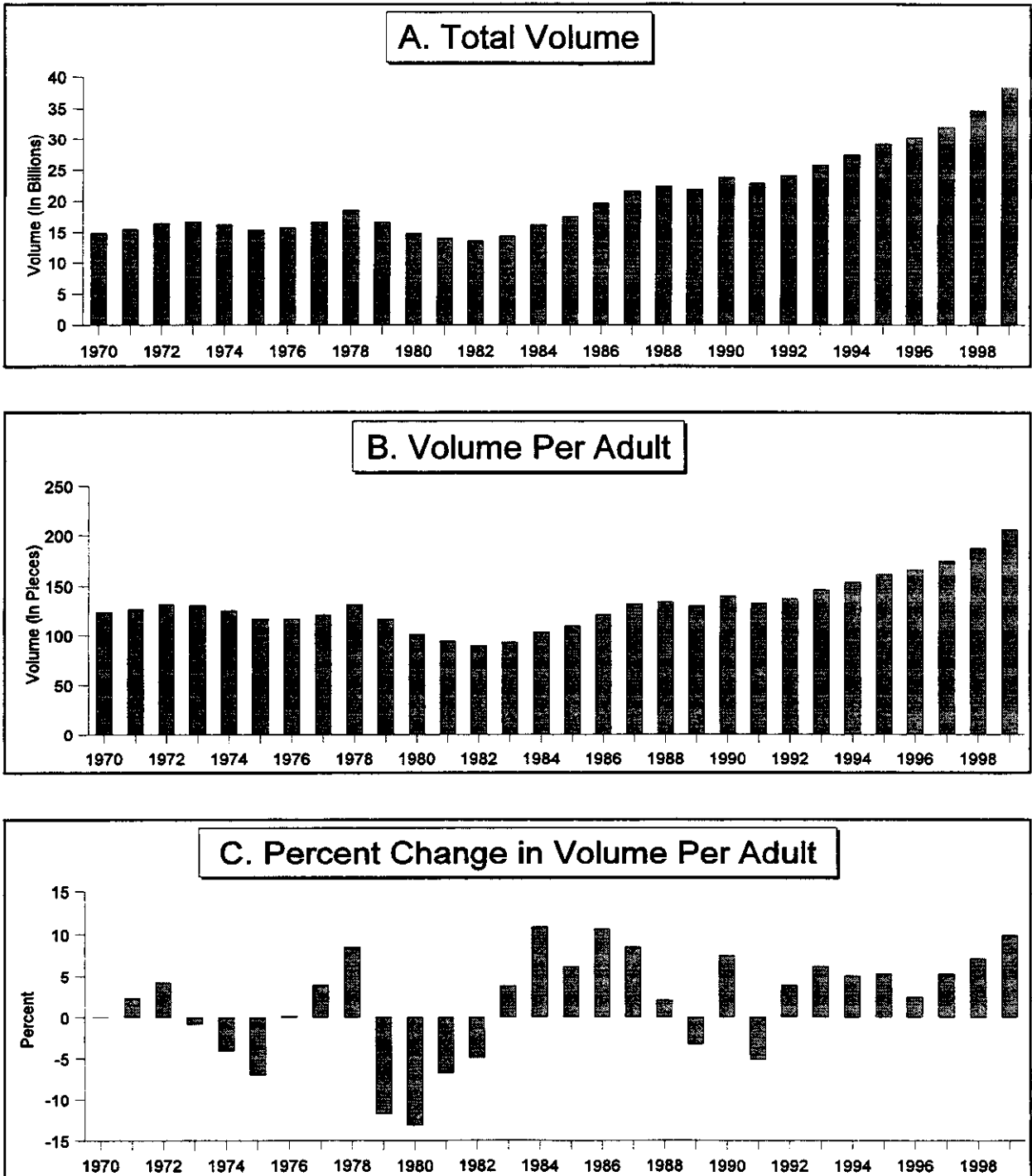


CHART F
Nonautomated and Automated Volumes of Noncarrier-Route Bulk Mail
(in millions of pieces)

	Nonautomated		Automated	
	Volume	Percentage	Volume	Percentage
1988	22,350.531	99.7%	75.405	0.3%
1989	21,472.331	97.8%	481.694	2.2%
1990	22,964.742	96.2%	913.343	3.8%
1991	20,215.138	88.2%	2,705.554	11.8%
1992	18,700.202	77.6%	5,404.346	22.4%
1993	13,634.270	52.6%	12,284.141	47.4%
1994	14,037.915	51.0%	13,483.042	49.0%
1995	13,725.016	46.9%	15,535.206	53.1%
1996	12,049.115	39.8%	18,238.603	60.2%
1997	7,972.686	24.8%	24,206.512	75.2%
1998	6,943.377	20.0%	27,833.758	80.0%
1999	6,323.525	16.4%	32,167.285	83.6%

3. Factors Affecting Volume

Table 11 shows that Standard A regular mail volume increased 39.86 percent over the past five years. The following discussion details the contribution of different factors toward this volume growth.

a. Own Price

The long-run own-price elasticity of Standard regular mail is estimated to be -0.570, meaning that a one percent increase in real own-price is estimated to elicit a 0.570 percent decrease in mail volume. Table 11 shows that the real price of regular mail increased 4.5 percent over the past five years. Applying the estimated elasticity to this price increase yields a volume decline of 2.48 percent due to the increase in real price.

b. Cross Price

The volume of Standard regular mail is influenced by the price of First-Class workshared letters because advertisers can send their mailings either Standard A or First-Class. It is estimated that the cross-price elasticity between the volume of Standard regular mail and the price of First-Class letters is 0.070. The real price of First-Class workshared letters decreased 1.8 percent over the past five years which, after applying the cross-elasticity, caused the volume of Standard regular mail to decline by 0.13 percent.

c. Consumption

Since direct mail is sent to encourage households to make purchases, advertisers often base their mailing decisions on expected levels of personal consumption. Therefore, real consumption expenditures per adult are included in the econometric analysis of Standard mail volumes. It is estimated that consumption exerts a strong influence on Standard regular mail with the estimated elasticity of 0.565. Therefore, the 14.5 percent increase in real consumption expenditures per adult over the past five years is estimated to have contributed 7.95 percent to the volume of Standard regular mail.

d. Transitory Income

Standard A Regular mail volume is also affected by changes in transitory income, measured by UCAP. In contrast to consumption, UCAP is more sensitive to changes in short-term economic conditions. The estimated elasticity of Standard A Regular volume with respect to UCAP is 0.308. Therefore, the 2.3 percent decline in UCAP over the past five years yields a 0.72 percent decline in volume.

e. Price of Newspaper Advertising

The decision to use direct mail as an advertising medium is based partly on the costs of alternative advertising options. Newspaper advertising is one of the more important alternatives to direct mail. A measure of the price of newspaper advertising is published by the Bureau of Labor Statistics and this price series is included in the volume equation of Standard A regular mail. It is estimated that a one percent increase in the real price of newspaper advertising leads to a 0.497 percent increase in the volume of Standard regular mail. Over the last five years, the real price of newspaper advertising increased by 20.7 percent leading to a 9.85 percent increase in the volume of Standard A regular mail as shown in Table 11.

f. Price of Computers

Because of its lower presort requirements than enhanced carrier route mail, Standard regular mail tends to consist of targeted mailings. Mail targeting is a sophisticated business relying on detailed analysis of large mailing list data bases and other sources of information about the buying habits of households. The cost of analyzing and managing these data bases is directly related to the price of computer equipment. Over the past five years, the real price of computers has declined by 81.3 percent, where the real price takes into consideration advancements in computer performance and increases in the general price level. The econometric analysis reveals that the estimated elasticity of Standard regular mail volume with respect to real computer prices is -0.277.

However, it seems reasonable that recent percentage declines in computer prices are less important than percentage declines occurring years ago when computer prices were higher. Therefore, the econometric equation also includes the square of computer prices which is designed to measure the tapering off of the positive impact of

1 declining computer prices on Standard A volume. The estimated elasticity of computer
2 prices squared is -0.023.

3 Combining the impact of the change in computer prices and the change in
4 computer prices squared yields the result that the 81.3 percent decline in computer
5 prices over the past five years contributed 12.60 percent to the volume of Standard A
6 Regular Mail.

7 **g. Adult Population**

8 Increases in adult population contributed 4.67 percent to the volume of Standard
9 A regular mail.

10 **h. MC95-1 Rule Changes**

11 The MC95-1 classification reform case increased the discounts for automated
12 mail but also imposed stricter qualifying requirements. The impact of changes in the
13 discount is reflected in the FWI price of Standard A regular mail. To account for the
14 impact of the new qualifying requirements, an MC95-1 dummy variable was included in
15 the demand equation. Econometric analysis attribute a 3.99 percent decline in
16 Standard A mail volume due to the rule change.

17 **i. R97-1 Rate Cross-Over**

18 As a result of the R97-1 case, the rate for Standard A regular 5-digit automation
19 letters was set below the rate for Standard A ECR basic letters. This rate cross-over
20 had the effect of shifting volume from ECR to the regular subclass. Attempts to model
21 this shift as a cross-price effect were unsuccessful because the rate cross-over is not
22 captured as part of the FWI price of either subclass. Instead, a dummy variable was
23 included in the demand equation for both Standard A Regular and Standard A ECR
24 mail to account for the shift of mail due to this rate cross-over. Table 11 shows that
25 this variable is estimated to have increased Standard A regular volume by 6.14 percent.

Table 11
CONTRIBUTIONS TO CHANGE IN
STANDARD A REGULAR VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	4.5%	-0.570	-2.48%
Cross Price Workshared Letters	-1.8%	0.070	-0.13%
Consumption	14.5%	0.565	7.95%
Price of Newspaper Advertising	20.7%	0.497	9.85%
Computer Price	-81.3%	-0.277	12.60%
Computer Price Squared		-0.023	
Adult Population	4.66%	1	4.66%
MC95-1 Rule Changes			-3.99%
R97-1 Rate Cross-Over			6.14%
Other Factors			5.25%
Total Change in Volume			39.86%

j. Other Factors

Table 11 shows that other factors contributed a 5.25 percent increase in the volume of Standard A regular mail over the past five years. The other factors include general developments in direct marketing, as well as specific developments affecting catalogs, Internet advertising, television advertising, telemarketing, fax advertising and alternate delivery. These various developments have on net affected Standard A Regular volume positively.

1 **j.1. Direct Marketing**

2 In 1998, the U.S. direct marketing industry was responsible for \$163 billion, or
3 almost three-fifths of total spending on advertising. Although direct mail is the largest
4 component of direct marketing, the industry has evolved to include other forms of
5 media. According to *The Economist*, the "low costs of direct marketing have created a
6 huge and fast growing industry---made up of direct mail, telemarketing, database
7 marketing, the Internet and free-phone TV, radio and print advertisements."
8 ["Direct Hit," *The Economist*, January 9, 1999].

9 According to the Direct Marketing Association, direct mail generated \$421.2
10 billion in sales in 1998, an 8 percent increase on the 1997 figure of \$390 billion.
11 Between 1992 and 1997, sales attributable to direct mail increased by 62 percent, and
12 the volume of direct mail grew at an average compound growth rate of 8.4 percent. The
13 Direct Marketing Association projects a higher 8.6 percent average compound growth
14 rate for the period from 1997 to 2002. [Elliott, Stuart. "Despite the Internet, Direct-Mail
15 Pitches Multiply," *The New York Times*, October 25, 1999].

16 Much of the growth in the importance of direct marketing can be attributed to the
17 use of more sophisticated database marketing methods. In contrast to traditional mass-
18 mailing methods which might only utilize demographic information about potential
19 customers, database marketing involves sellers using a mixture of demographic data,
20 surveys, electoral information, and credit-card data to group the population into
21 segments. This information is passed to a direct marketing agency that organizes the
22 information into profiles. Once a type is determined, the agency buys the names and
23 addresses of similar people from mailing lists sold by list brokers. Using this information
24 allows direct marketers to target mailings more accurately by closely matching the

1 goods and services being marketed with potential customers. ["What is Database
2 Marketing," <http://sramarketing.com/sra/Tour/Database/WhatIsDatabase.html>].
3 [Headden, Susan, "Special Report: The Junk Mail Deluge," *U.S. News and World*
4 *Report*, December 8, 1997]. ["Hi Ho, Hi Ho, Down the Datamine We Go," *The*
5 *Economist*, August 23, 1997].

6 Over the last several years, the growth of direct marketing has also been
7 facilitated by a dramatic increase in the size of databases, and the detail of the
8 information contained in them. A recent *Business Week* article cites the example of MCI
9 Communications Corporation, which combed marketing data on 140 million households
10 and evaluated each on as many as 10,000 attributes (e.g, income, lifestyle, and details
11 about past calling habits). [Verity, John, "Coaxing Meaning Out of Raw Data," *Business*
12 *Week*, June 15, 1997]. U.S. West is also turning to database marketing, to pinpoint
13 customers who will respond to introductory offers and keep their second lines open long
14 enough for the carrier to make a profit. U.S. West recently designed a program that
15 went through the records of a few thousand of its customers in the Phoenix area and
16 created a statistical model of the ideal prospect. Using that model on millions more
17 customers records, the program identified clusters of prospects that fit U.S. West's
18 model of households that could be served without significant expense. The resulting
19 direct mail program led to response rates equal to that of a broadcast campaign, but
20 costing several million dollars less. The program could even calculate when a campaign
21 would peak, allowing the carrier to cut back before the response rate fell. [Verity,
22 *Business Week*, June 15, 1997].

23 j.2 Catalogs

24 The growth of consumer and business-to-business catalogs is a second recent
25 development impacting on Standard A regular mail. According to the Direct Marketing

1 Association, consumer catalogs in the United States were expected to produce \$53
2 billion in sales in 1998, nearly \$4 billion more than the 1997 figure. Sales of this
3 magnitude are the result of an estimated 12 billion catalogs being sent to households.
4 [Tedeschi, Bob, "Catalogue Companies Slow to Set Up Shop Online," *The New York*
5 *Times*, December 1, 1998]. Business-to-business catalogs, both electronic and
6 traditional, are growing even faster. The Direct Marketing Association reported an
7 increase of 6.5 percent each year from 1990 to 1995 in the number of business-to-
8 business catalogs. The Association expects a growth rate of 7.1 percent per year
9 between 1995 and 2000.

10 The growth of catalogs is in part due to the use of more sophisticated database
11 marketing methods, which has improved the ability of mail-order companies to
12 accurately target potential customers. In particular, this development has enabled
13 many of these companies to shift their marketing focus to specialty catalogs that
14 present a list of products geared to particular consumers. Because the specialty
15 catalogs are smaller, they can be sent as Standard A material rather than Standard B
16 Bound Printed Matter. As evidence of this trend, *The 1997 Household Diary Study*
17 (Table 6-7) reports that catalogs represented 16.7 percent of third-class bulk mail
18 received by households in 1996, up from 14.2 percent and 14.8 percent in 1987 and
19 1991, respectively. This percentage dropped again to 14.8 percent in 1997, perhaps
20 reflecting increased specialization in catalog content and tighter targeting by mailers.

21 The transition to specialty catalogs has been rapid, occurring largely during the
22 past eight years. According to Precision Marketing, 80 percent of all mail-order sales in
23 the U.S. now stem from specialty publications. However, not all sellers have benefitted
24 from the increased specialization of catalogs. According to a recent *Chicago Sun Times*
25 article, Lands' End expects fourth quarter 1999 sales to drop due to fewer orders from

1 its now smaller catalogs. [*Chicago Sun Times*, December 5, 1999]. Moreover, according
2 to a recent *Catalog Age* article, some sellers have found that they can increase their
3 profits, or reduce their losses, through cutting catalog circulation. Sears, for example,
4 stunned industry observers several years ago when it decided to cease sending its
5 catalog, the "Sears Bible," as it was called. "The increased costs of direct mail do have
6 an impact on our ability to prospect," Sears spokesperson Jan Drummond says. The
7 company now mails fewer catalogs for prospecting ["Cutting Losses by Cutting Circ,"
8 *Catalog Age*, October 1999].

9 The growth of specific mail-order industries has also contributed to the growth of
10 consumer catalog mail. For example, in the mail-order pharmaceutical industry, where
11 mail-order firms essentially act as cost-cutting middlemen between insurance plans and
12 the consumer, the expansion of medical sales through the mail has had a positive
13 impact on both Standard A and Standard B mail. This industry has grown to supply 6
14 percent of all prescriptions filled in the United States. According to the American
15 Managed Care Pharmacy Association (AMCPA), the mail-order pharmaceutical industry
16 was netting \$100 million annually by 1981. That figure swelled to \$8 billion in 1996, and
17 is projected to exceed \$20 billion by the year 2000. The magnitude of its impact, though
18 currently immeasurable, appears to be growing.

19 Despite the trend towards the Internet, discussed in the following section, many
20 sellers prefer printed catalogs, and some sellers even find that catalogs represent a
21 more effective means of generating sales. According to a recent *Catalog Age*, one
22 marketer of teen apparel and accessories, Alloy, finds that the print catalog is "four to
23 five times more cost-effective than any portal relationship or other advertising method in
24 driving traffic to the Web-site." In fact, many recent Alloy promotions combine their
25 printed catalog with their Web-site. For example, Alloy and Sony teamed together to

1 promote a contest where catalog recipients would search the catalog for icons with the
2 names of one of Sony's video games. When they found the icons, they would submit
3 the icons to their Web-site. ["Alloy Melds Print and Online," *Catalog Age*, November
4 1999].

5 j.3. Internet Advertising

6 Perhaps the fastest growing segment of advertising is the Internet. While
7 estimates of advertising expenditures using this medium vary widely, virtually all
8 estimates point to dramatic recent growth and continued dramatic growth in the near
9 future. According to the Internet Advertising Bureau, Internet advertising reached nearly
10 one billion dollars in 1997. Forrester Research projects that worldwide Internet
11 advertising will increase tenfold, going from \$3.3 billion in 1999 to \$33 billion by 2004.
12 Moreover, they predict that Internet advertising will account for roughly 8 percent of all
13 advertising expenditures by 2004. [Lambert, Patrick, "A Second Quarter Speed Bump
14 for Net Ad Spending," *Business Week*, June 18, 1998]. ["Advertising That Clicks," *The*
15 *Economist*, October 9, 1999].

16 According to a recent *Business Week* article, the "Web has edged out direct mail
17 to become the third most popular medium for local businesses to reach prospective
18 customers." Based on a survey of 1,470 companies in 14 United States cities, 37.2
19 percent of local businesses used the yellow pages for advertising, 18.7 percent used
20 newspapers, and 17.2 percent used the Internet. Direct mail was the preferred
21 advertising medium for 15.5 percent of respondents. ["Data Mine," *Business Week*,
22 July 16, 1999].

23 Some companies, which have begun to use the Internet as an advertising
24 medium, have attempted to apply what they know about traditional advertising media to
25 the Internet, often with mixed success. According to *The Economist*, "although

1 marketers are waking up to the importance of the web as a new advertising medium,
2 few know how to make the best use of it. Most still "spray and pray", throwing money at
3 the web in the hope of reaching a mass-audience and building a brand, just as they did
4 once before in the broadcast world." ["Advertising That Clicks," *The Economist*, October
5 9, 1999].

6 Thus far, the Internet has been used in different ways for advertising. The more
7 sophisticated sites are mini-catalogs, complete with photographs, descriptions, online
8 ordering capabilities, and, in some cases, links to the original manufacturer's web page
9 for more detailed information about the product. Business-to-business sites are
10 extending these capabilities to allow product and brand comparisons, and
11 specifications-based ordering and shipping. "With Internet commerce, you're dealing
12 with a lot of 'eaches,' not a truckload of identical products," says Michael A. Schmitt,
13 senior vice-president at J.D. Edwards & Co., a Denver software vendor. Each custom
14 order can demand a slightly different combination of product parts, and that triggers
15 tens or even hundreds of purchase orders to parts and materials suppliers. "If you tried
16 to handle all this on paper and over the phone, it would never get done," says Schmitt.
17 "Computers have to talk to other computers." [Port, Otis. "Customers Move Into the
18 Driver's Seat," *Business Week*, October 4, 1999].

19 Some companies have moved their entire mail-order catalog to their web-site, so
20 that individuals wishing to make a purchase can either telephone the seller, or enter the
21 seller's web-site, select which products to purchase, pay with a credit card through a
22 secure socket layer, indicate shipping preferences, request a catalog, and so forth, all
23 without ever talking to an individual sales representative of the firm. Order confirmation
24 is then sent to the purchaser via E-mail. Many of these sellers offer customer service
25 on-line as well. Purchasers having questions about a product can consult reference

1 information about the product, download a copy of an operating manual, do a search
2 for local dealers or service centers, or send an E-mail message to the technical support
3 department of the company. Very often, product registration, which used to be done
4 predominantly by sending a post card with the name and address of the purchaser, and
5 the model and serial number of the product, can now be handled over the Internet via a
6 web connection or through E-mail.

7 Many companies also use the Internet to communicate with existing customers.
8 Notices of product upgrades, pending sales, special deals, and new products can be
9 made through E-mail. While estimates of volume are difficult to come by, it is safe to
10 say that some of these E-mail messages are replacing notices that used to be sent by
11 mail. Still, direct mail remains a powerful force even in the Internet age. In a *New York*
12 *Times* article, Robert Reisner, the Postal Service's vice president of strategic planning,
13 is quoted as saying "interest in the Internet is growing, but even America Online still
14 sells its services primarily by mail." [*New York Times*, August 18, 1998].

15 Electronic catalogs serve as an alternative to shopping by catalogs that would
16 normally be mailed third class. Gail Dutton from *Management Review* finds catalogers
17 cutting costs and expanding their reach by putting a portion of their catalogs on the
18 Internet or online services. However, not all catalog companies have jumped on the
19 Internet bandwagon. "It's very frustrating for a lot of people with a 14.4 modem and a
20 486 PC to sit and wait for a picture of T-shirt to show up," argues Jeff Johnson, vice
21 president of corporate communications for Rivertown Trading Company. "It's just a
22 whole lot easier to look at a catalogue." [Tedeschi, *The New York Times*, December 1,
23 1998]. Moreover, some sellers fear that web sales will cannibalize their own catalog
24 sales, offsetting any additional revenues obtained through the Internet. Others,
25 accustomed to a nine-month cycle between catalog inception and distribution, are

1 discouraged by the fast pace of the Internet. Finally, an important consideration is cost.
2 According to Bill Dean of W.A. Dean & Associates, an effective and profitable site can
3 cost between \$200,000 and \$500,000 to build. Maintaining the site would require 15 to
4 20 full time staff which could cost upwards to \$40,000 a month in payroll. [Tedeschi,
5 *The New York Times*, December 1, 1998].

6 Many companies are moving advertising resources away from television and
7 print media into direct mail, often using mailing lists and sales leads obtained through
8 the Internet. For example, companies such as New Business Leads (NBL) and
9 infoUSA allow users to go to their web-sites, specify what types of businesses to target,
10 their locations, number of employees, etc., and then generate data that can be used to
11 create mailing labels for direct marketing. [Haskin, David, "Generate Sales Leads ---
12 Fast," *Business Week*, December 7, 1998].

13 These increasingly more sophisticated methods of targeting potential customers
14 have allowed direct marketing to remain an attractive approach to selling, even in the
15 face of more sophisticated, Internet-based, approaches.

16 j.4. Other Advertising Media

17 j.4.1. Television

18 Cable television can in some cases be an alternative to direct mail. This is
19 because cable television allows marketers to target particular audiences and air their
20 advertisements on specific programs accordingly. Marketing success with this medium
21 has not gone unnoticed. Expenditures for cable television advertising have risen
22 spectacularly. According to McCann-Erickson, estimated cable network advertising and
23 cable non-network advertising expenditures grew from \$2,457 million in 1990 to \$7,626
24 million in 1997. This more than threefold increase represents an average annual growth
25 rate of over 30 percent. In contrast, total U.S. advertising expenditures grew by 29.1

1 percent over the entire period. [McCann-Erickson, *Estimated Annual U.S. Advertising*
2 *Expenditures 1990-1997*, May 18, 1998].

3 The direct-to-home satellite industry provides another vehicle for advertising.
4 This industry, which currently is in about four million homes, allows a household to
5 receive about 90 channels through an 18-inch satellite dish. Once the initial investment
6 of \$200 is paid, the household pays about \$50 per month for this service. While satellite
7 currently offers more channels to households, it does not offer local channels. Cable
8 companies are experimenting with set-top boxes that offer 150 channels, nearly four
9 times as many as the 40 channels that current cable set-top boxes allow. [Fabrikant,
10 Geraldine, "One Challenger to Cable TV Fades, Another Appears Via Satellite," *The*
11 *New York Times*, January 2, 1997].

12 **j.4.2. Telemarketing**

13 As discussed in my R97-1 testimony [p.124], telemarketing, or phone solicitation,
14 has both advantages and disadvantages as compared to direct mail. Direct contact is
15 made which provides an immediate indication of household response, unlike direct mail
16 which may be discarded immediately or held for an extended time before generating a
17 response. The effective cost of telemarketing may have also declined in recent years as
18 auto-dialed computer recorded messages have developed, allowing telemarketing firms
19 to reduce labor costs.

20 At the same time, telemarketing is viewed as intrusive by some persons. The
21 growth of telephone services such as Caller ID and various "privacy" options allows
22 people to screen out unwanted calls from telemarketers.

23 While some telemarketing could supplant direct mail, telemarketing and direct
24 mail are also being used in tandem through integrated direct marketing. Integrated
25 direct marketing is the use of many forms of direct marketing to reinforce advertising

1 messages. A direct piece of mail is sent so that a hard copy advertisement can be
2 reviewed at leisure. This initial step is followed by a phone call. In this way,
3 telemarketing has become a complement to direct mail, rather than a substitute.

4 **j.4.3. Fax Advertising**

5 As fax machines become more pervasive, advertising by fax has emerged.
6 Supposedly, fax advertising has the advantage over direct mail because it gives the
7 impression of urgency. This alone may result in a higher customer response rate.
8 Nevertheless, fax advertising has some important disadvantages relative to direct mail.
9 For instance, the print quality of faxes is inferior to that of direct mailings. There has
10 also been consumer backlash against fax advertising. A number of complaints to the
11 Idaho State Legislature's Consumer Protection Unit by businesses, who reported being
12 inundated with unsolicited fax ads, led to House Bill 152, which would prohibit
13 unsolicited fax advertising [Brad Carlson, "Legislature Considers Law to Prohibit
14 Sending Unsolicited Advertising by Fax," *Idaho Business Review*, March 3, 1997].

15 As I noted in my R97-1 testimony [p.122], to the extent that fax advertising has
16 impacted mail volume, the effect would be expected to be stronger for Standard A
17 Regular as opposed to Standard A ECR mail. Fax advertising would not likely serve as
18 a strong substitute for saturation type mailings.

19 **j.4.4. Alternate Delivery**

20 The consideration of alternate delivery in my R97-1 testimony [USPS-T-6,
21 Docket No. R97-1 at 126 to 127] remains relevant. Alternate delivery has apparently
22 lost much of its prominence since the late 1980s and early 1990s, when catalogers
23 reacted to increasing postal rates in 1988 and 1991. According to *Catalog Age* [April
24 1996], at their zenith in 1993 and 1994, Publishers Express (PE) and Alternate Postal
25 Delivery (APD) served a total of 85 markets. Their growth ended, however, after a 1994

1 study, sanctioned by the Direct Marketing Association, showed that for most catalog
2 participants, the Postal Service was superior from both a delivery and response
3 perspective.

4 *Catalog Age* reported that alternative delivery has steadily fallen out of favor with
5 catalogers and faces a bleak future following the closing of PE and the repositioning of
6 APD. With volume plummeting, PE announced in February 1996 that it would close its
7 business. Shortly thereafter, APD acquired 12 of PE's licensees, the delivery firms
8 handling the actual catalog deliveries. Meanwhile, APD, which had sought to deliver
9 volumes of catalogs, refocused its attention on marketing and delivering other products.

10 According to Tim Quinn, senior vice president of APD, there is more demand for
11 APD's services for delivery of catalogs weighing over 3 ounces, since heavier mailings
12 may give APD a competitive edge over Postal Service rates. Mr. Quinn asserts that an
13 address-specific piece weighing in excess of 3.3 ounces costs 15 percent to 20 percent
14 less to send via Alternate Postal Delivery than the Postal Service. "For certain
15 customers, alternate delivery will always be a good alternative," asserts Jim Moore,
16 managing director of national accounts for Southwestern Bell Yellow Pages. "The
17 economies makes sense for mailers who do not mail enough to meet postal discounts
18 or it would be too expensive through the USPS." Moore mentioned an important caveat,
19 however. "With direct marketers going toward more targeting it is going to be difficult for
20 alternate delivery companies to compete with the USPS which goes to every address
21 and individual." [Lisa Yorgey, "Alternative Delivery vs. USPS: It's Not a Question of
22 Either/Or," *Target Marketing*, November 1996].
23
24
25

4. Volume Forecast

a. Total Volume

Table 11A presents the volume forecast for Standard A Regular mail, projecting the impacts of change in the non-rate and postal rate variables between the Base Year and the Test Year. The before-rates volume forecast is 42,783.773 million pieces. The after-rates forecast, which employs the proposed rates for Standard A mail and First-Class workshared letters, is 40,998.656 million pieces.

Table 11A
Volume Forecast of Standard A Regular Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	38,490.810	38,490.810
Non-Rate Impact	9.52%	9.52%
Postal Rate Impact	1.49%	-2.74%
Test Year Volume (Millions)	42,783.773	40,998.656

b. Forecasts of Nonautomated Mail

Standard regular nonautomated mail consists of the letter and nonletter categories of Basic and Presort Regular mail. Assuming no change in current rates, the before-rates forecasted Test Year volume of nonautomated Standard A Regular mail is 5,520.725 million pieces. At rates proposed by the Postal Service, the projected volume in the Test Year is 5,304.047 million pieces.

c. Forecasts of Automated Mail

The total forecasted Test Year volume of the automation categories of Standard A Regular mail is 37,263.048 million pieces in the before-rates scenario. At rates proposed by the Postal Service, the projected volume in the Test Year is 35,694.609 million pieces.

C. Enhanced Carrier Route

1. Definition

The Standard A enhanced carrier route subclass was created as part of the MC95-1 classification reform. To qualify for the Standard A enhanced carrier route subclass, mailings must contain at least 200 pieces (or 50 pounds) and each piece must be part of a group of 10 or more pieces to one carrier route. To be sent Standard A, each piece must weigh less than one pound.

Within Standard enhanced carrier route, there is a distinction between letter and nonletter mail where nonletters consist of flats, parcels, and irregularly shaped pieces. There are four letter and three nonletter categories of enhanced carrier route mail. The four letter categories are: automation, basic, high density, and saturation. The three nonletter categories are: basic, high density, and saturation. Automation letters must be automation compatible and 100 percent delivery point barcoded.

2. Volume History

Figure 12 shows the total volume of ECR regular mail beginning in 1980, the first full year after the carrier-route presort discount was introduced. From 1980 to 1984, carrier-route volume grew rapidly and nearly tripled from 47.9 pieces per adult in 1980 to 136.1 pieces per adult in 1984. From 1985 through 1988, volume growth moderated, with total volume rising from 23.3 billion pieces in 1985 to 29.0 billion pieces in 1988.

Since 1988, the volume of carrier-route mail has grown much more slowly, rising at about the same rate as adult population. The middle panel of Figure 12 shows that volume per adult in 1999 was barely more than its level in 1988. Total volume in 1999 was 32.8 billion pieces, or 175.7 pieces per adult.

3. Factors Affecting Standard A ECR Volume

a. Own price

A one percent increase in real own-price is estimated to elicit a 0.808 percent decrease in mail volume. Table 12 shows that real own-price increased 2.0 percent over the past five years leading to a 1.62 percent decline in volume after applying the estimated own-price elasticity.

b. Consumption

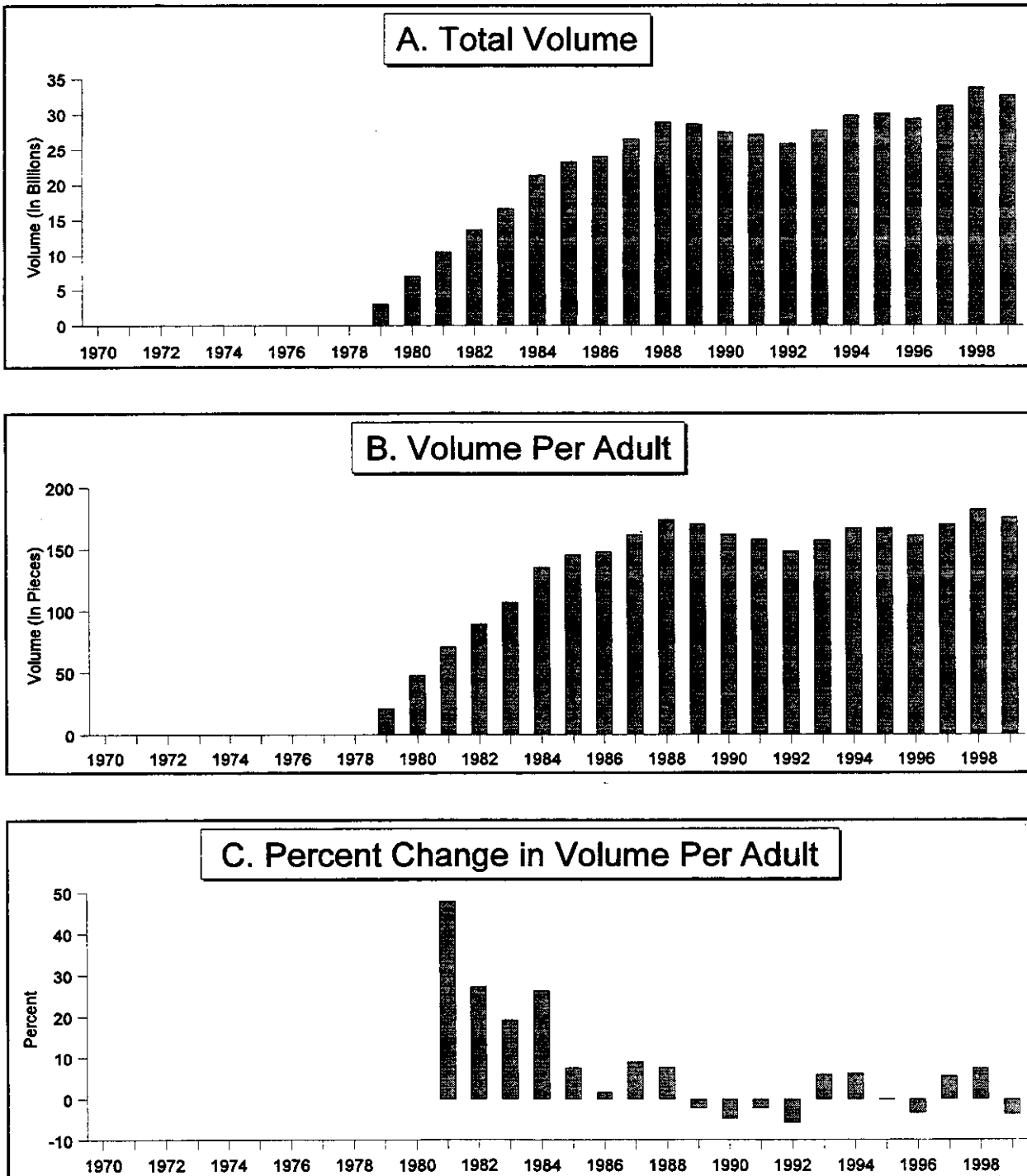
Consumption expenditures also influence the volume of ECR mail. It is estimated that the elasticity of ECR mail volume with respect to real consumption expenditures per adult is 0.430. Therefore, the 14.4 percent increase in real consumption per adult is found to contribute 5.94 percent to the volume of Standard ECR mail.

c. Transitory Income

The volume of ECR mail is more sensitive to short-term fluctuations in economic conditions than the volume of Regular mail. Since ECR mail is less targeted and likely to have a much lower response rate, it is likely that in periods of economic contraction, ECR volume declines more rapidly than Regular volume. Similarly periods of expansion would encourage ECR volume as advertisers try to reach new customers who might begin making purchases.

While consumption expenditures are somewhat affected by short-term economic fluctuations, it is generally not considered a measure of transitory income because of the strong theoretical and empirical links between consumption and permanent or long-run income. Therefore, the Federal Reserve's index of capacity utilization, or UCAP, is also included in the volume equation for ECR mail. The estimated elasticity of ECR volume with respect to UCAP is 0.886. Applying this estimated elasticity to the 2.3

Figure 12
Standard Enhanced Carrier Route



1 percent decline in UCAP over the past five years leads to a 2.03 percent decline in the
2 volume of ECR mail.

3 **d. Price of Newspaper Advertising**

4 The estimated elasticity of ECR mail volume with respect to the cost per
5 thousand (CPM) of newspaper advertising is 0.812. Table 12 shows that the price of
6 newspaper advertising, as reported by Bureau of Labor Statistics, increased 20.7
7 percent in real terms over the past five years. This percentage increase combined with
8 the estimated elasticity results in an increase in ECR mail volume of 14.91 percent.

9 **e. Adult Population**

10 Growth in adult population contributed 4.64 percent to the volume of Standard A
11 ECR mail.

12 **f. MC95-1 Rule Changes**

13 As noted earlier, the MC95-1 classification reforms imposed stricter requirements
14 for many workshared categories. Table 12 shows that it is estimated that these stricter
15 requirements, taken by themselves, reduced Standard A ECR mail volume by 4.28
16 percent over the past five years.

17 **g. R97-1 Rate Cross-Over**

18 As explained in the section on Standard A Regular mail, as a result of the R97-1
19 rate case, the price of regular automation 5-digit letters was set below the price of ECR
20 basic letters. This led to a shift in volume from ECR to the Regular subclass. To
21 capture this effect, an MC95-1 dummy variable is included in the volume equation for
22 ECR mail. Table 12 shows that this variable explains a 6.27 percent decline in the
23 volume of ECR mail.

Table 12
CONTRIBUTIONS TO CHANGE IN
STANDARD A ENHANCED CARRIER ROUTE VOLUME
OVER THE LAST FIVE YEARS

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	2.0%	-0.808	-1.62%
Consumption	14.4%	0.430	5.94%
Transitory Income	-2.3%	0.886	-2.03%
Price of Newspaper Advertising	20.7%	0.812	16.43%
Adult Population	4.66%	1	4.66%
MC95-1 Rule Change			-4.28%
R97-1 Rate Cross-Over			-6.27%
Other Factors			-3.14%
Total Change in Volume			9.67%

h. Other Factors

Table 12 shows that the volume of Standard A ECR mail increased 9.67 percent over the past five years. In addition to the impact of the variables discussed above, other factors were responsible for a 3.14 percent decline in volume.

The section on Standard A Regular mail discussed recent developments affecting Standard A mail volumes. Much of this discussion applies to enhanced carrier route mail volume as well. Enhanced carrier route mail tends to be saturation mail as opposed to the more highly targeted regular mail. The other factors affecting ECR mail

we are considering in this section are related in part to the degree to which these factors affect saturation mail.

h.i. Improved Market Targeting of Direct Mail

Improved targeting precision has both positive and negative affects on ECR volume. Effective direct mail targeting decreases ECR volume by eliminating mail which was previously sent to individuals who are now considered poor candidates for advertising. With more detailed information about household preferences, however, marketers have the opportunity to increase their response rate. As response rates increase, the relative cost of direct mail advertising declines. As this happens, advertisers would shift advertising dollars away from other forms of marketing toward direct mail. This outcome would increase ECR volume.

Technological advancements that have lowered the cost of automating mail would not be expected to have much of an effect on Standard A ECR mail. Only about six percent of ECR mail is automated so the subclass is less likely to benefit from declines in the costs or improvements in the performance of automation equipment. Moreover, recent changes in the postal rate structure have encouraged mailers to send automated Standard A Regular mail instead.

h.ii. Catalogs

To the extent that catalogs are also sent as Standard A ECR mail, the recent developments discussed in the Standard A Regular section also apply. However, the movement toward specialty catalogs would be expected to have a neutral or negative impact on ECR volume. By their very nature, specialty catalogs are more targeted and will be less likely to qualify for the ECR subclass.

h.iii. Internet Advertising

ECR mail may be less affected by Internet advertising than Regular Standard A mail. Internet advertising, being targeted around individual computer and Internet usage, is not as much of a direct substitute for high density mailings sent to whole groups of households on the basis of Zip Code or carrier route.

4. Volume Forecast**a. Total Volume**

The Base Year volume of Standard A ECR mail is 32,769.071 million pieces. Between the Base Year and the Test Year, non-rate factors contribute 0.87 percent to volume and the decline in the real price of Standard A ECR mail contributes an additional 1.75 percent. Thus, the before-rates Test Year volume forecast is 33,630.517 million pieces.

In the after-rates forecast, both the Base Year volume and the non-rate impact are the same as in the before-rates forecast. The proposed increase in Standard A ECR mail is projected to reduce volume by 0.68 percent between the Base Year and the Test Year, yielding an after-rates forecast of 32,828.211 million pieces.

Table 12A
Volume Forecast of Standard A ECR Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	32,769.071	32,769.071
Non-Rate Impact	0.87%	0.87%
Postal Rate Impact	1.75%	-0.68%
Test Year Volume (Millions)	33,630.517	32,828.211

b. Forecasts of Nonautomated Mail

The forecasted volume of the nonautomated portion of Standard A enhanced carrier route Standard mail, if present rates are continued, is 31,739.292 million pieces in the Test Year. The forecasted volume at rates proposed by the Postal Service is 30,976.309 million pieces.

c. Forecasts of Automated Mail

The forecasted Test Year volume of Standard A enhanced carrier route automated mail, if present rates are continued, is 1,891.225 million pieces. The after-rates volume forecast, assuming implementation of the rates proposed by the Postal Service is 1,851.903 million pieces.

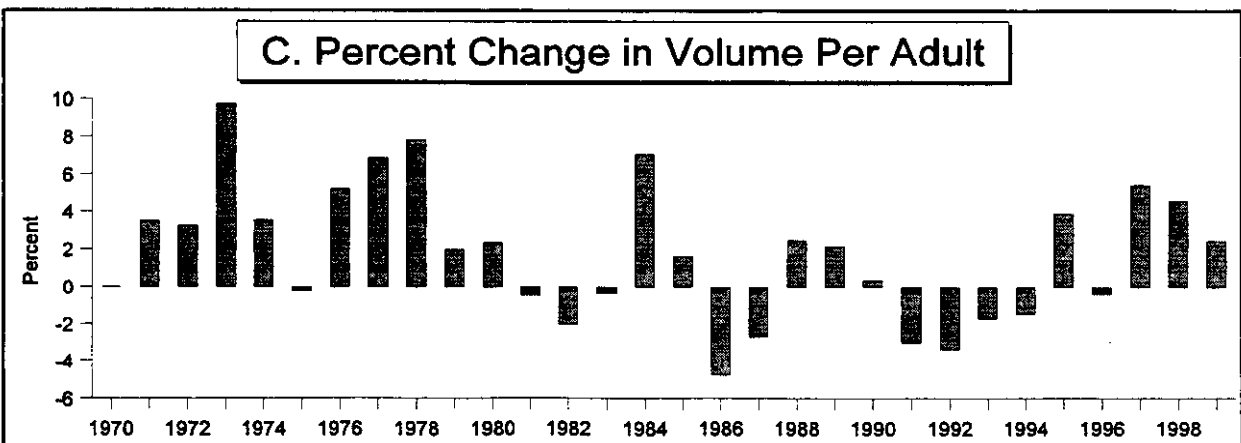
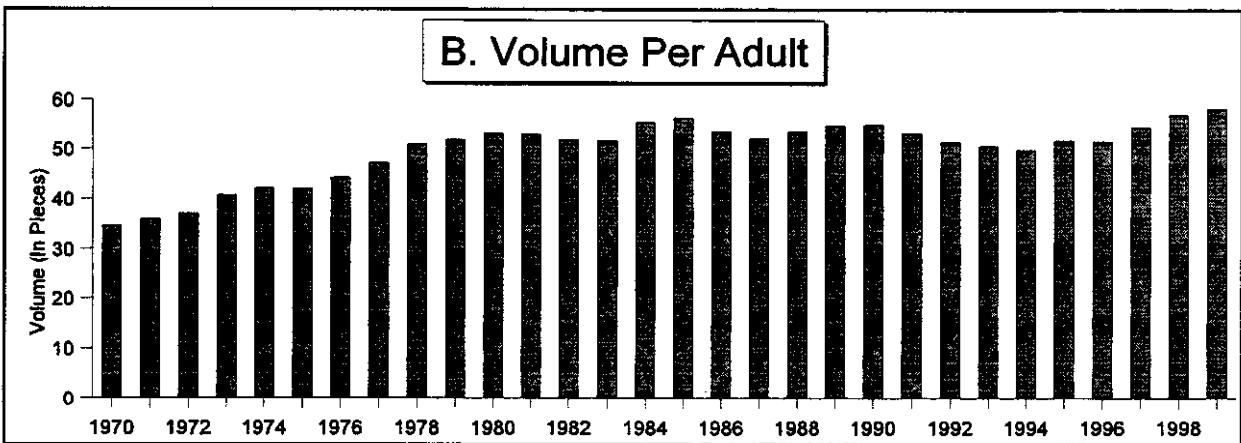
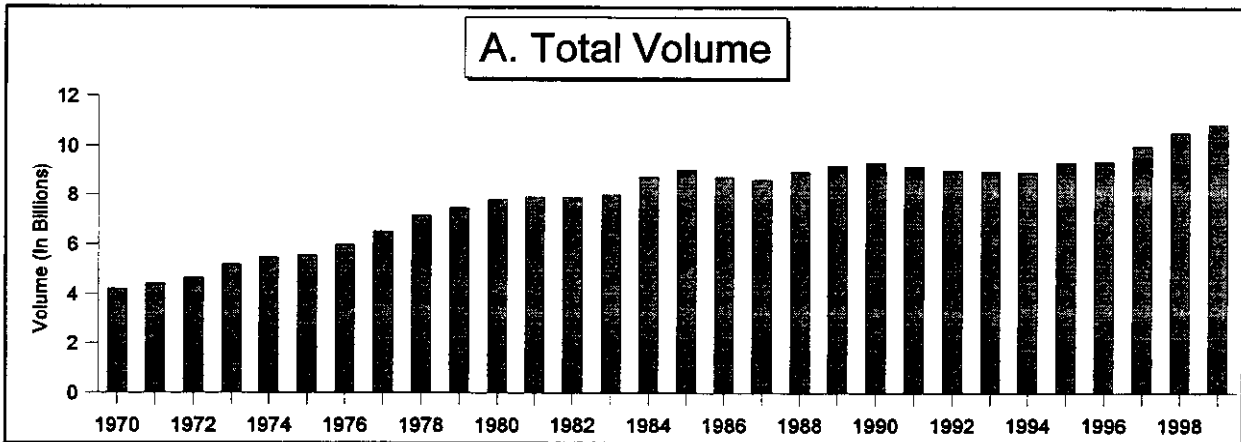
E. Standard A Nonprofit Mail**1. Definition**

Standard A Nonprofit mail is sent at reduced rates by authorized charitable organizations, educational institutions, and professional associations. According to the Nonhousehold Mailstream Study, 92.7 percent of all solicitations for contributions sent to households were mailed at Standard A Nonprofit rates in 1979. This category of mail is also used for alumni mailings, membership-drive activities and for nonprofit organization newsletters and magazines that have too much advertising to qualify for Periodicals rates or find Standard A Nonprofit rates more favorable.

2. Volume History**a. Total Volume**

Standard A Nonprofit mail essentially consists of what was known as third-class noncarrier-route nonprofit mail. Figure 13 shows that the third-class noncarrier-route nonprofit mail experienced steady growth from 1970 to 1990, rising from 4.2 billion

Figure 13
Standard Nonprofit Mail



pieces to 9.4 billion pieces. On a per adult basis, volume grew over this time period from 34.9 pieces per adult to 55.1 pieces per adult, an increase of 58 percent.

Standard A Nonprofit mail volume declined in the early 1990s but growth in the last few years pushed total volume to over 10.9 billion pieces. On a per adult basis, volume in 1999 was 58.6.

b. Nonautomated and Automated Volumes

Chart G presents the breakdown of total noncarrier-route nonprofit mail volume into nonautomated and automated volumes since the introduction of the ZIP + 4 discount in 1988. Automation volume has grown in every year, both in absolute terms and as a share of total volume. In 1999, more than two-thirds of Standard A Nonprofit mail was automated.

Chart G
Nonautomated and Automated Volumes of Noncarrier-Route Bulk Mail
(in millions of pieces)

Standard Nonprofit				
	Nonautomated		Automated	
	Volume	Percentage	Volume	Percentage
1988	8,852.884	99.3%	66.152	0.7%
1989	8,983.643	97.4%	235.711	2.6%
1990	8,914.252	95.2%	445.462	4.8%
1991	8,120.310	88.4%	1,065.377	11.6%
1992	7,292.763	81.2%	1,690.670	18.8%
1993	6,133.727	68.6%	2,805.604	31.4%
1994	5,862.238	65.8%	3,041.734	34.2%
1995	5,967.290	63.9%	3,372.762	36.1%
1996	5,320.204	56.6%	4,077.993	43.4%
1997	4,278.694	42.8%	5,722.159	57.2%
1998	3,711.928	35.2%	6,839.326	64.8%
1999	3,486.325	31.9%	7,447.624	68.1%

3. Factors Affecting Volume

Table 13 shows that the volume of Standard Nonprofit mail increased 22.80 percent over the past five years. A discussion of the factors contributing to this volume increase is presented below.

a. Own Price

Over the past five years, the real price of Standard A Nonprofit mail increased by 2.4 percent. The estimated own-price elasticity of Standard A Nonprofit mail is -0.162, meaning that the small increase in real price was responsible for a 0.37 percent decrease in volume.

b. Consumption

Real consumption expenditures per adult increased 14.4 percent over the past five years. It is estimated that a one percent increase in this variable leads to a 0.772 percent increase in Standard A Nonprofit mail volume. Thus, the increase in real consumption expenditures per adult contributed 10.92 percent to the volume of Standard A Nonprofit mail.

c. Adult Population

Growth in adult population over the past five years contributed 4.64 percent to the volume of Standard A Nonprofit mail.

d. Fall Election Year

The national and state election committees of the Democratic and Republican parties can mail at nonprofit rates. Not surprisingly, econometric analysis finds that Standard A Nonprofit volume is greater in the fall quarter of years in which there are congressional elections. To capture this effect, a fall election year dummy variable is included in the demand equation for Standard A Nonprofit mail. Election years are every other year, recognizing that the calendar fall quarter of a given year is actually the

1 first postal quarter of the next year. Therefore, the period from 1994 to 1999 begins
2 with a non-election fall quarter (postal 1994q1 is calendar 1993q4) and ends with an
3 election fall quarter (postal 1999q1 is calendar 1998q4). Consequently, over the five
4 year period from 1994 to 1999, the fall election year dummy variable explains a 1.05
5 percent increase in Standard A Nonprofit mail.

6 **e. Spring Election Year**

7 Primary elections are typically held in the spring of the election year.
8 Econometric analysis reveals that the spring quarter of election years has greater
9 volume, after accounting for the effects of the other econometric variables. The five-
10 year period 1994 to 1999 began with a spring election year (postal quarter 1994q3) and
11 ends with a spring non-election year (postal quarter 1999q3). Therefore, over this five-
12 year period, the spring election year dummy variable reduced Standard A Nonprofit
13 volume by 1.03 percent, as shown in Table 13.

14 **f. Other Factors**

15 In addition to the effects of the variables considered above, other factors
16 contributed 7.59 percent to the volume of Standard A Nonprofit mail over the past five
17 years.

Table 13
CONTRIBUTIONS TO CHANGE IN
STANDARD NONPROFIT VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	2.4%	-0.162	-0.37%
Consumption	14.4%	0.772	10.92%
Adult Population	4.66%	1	4.66%
Fall Election Year			1.05%
Spring Election Year			-1.03%
Other Factors			7.59%
Total Change in Volume			22.80%

f.i. Technological Advancements

As discussed in my R97-1 testimony [p. 141], the same technological advancements improving targeting that have benefitted Standard A Regular mail have also benefitted nonprofit mailers, but probably to a lesser extent. Smaller nonprofit organizations often may not have the wherewithal to purchase or manage the required mailing technology. Nonetheless, more effective direct marketing has given nonprofit organizations the incentive to shift marketing expenses toward mail and away from other advertising media.

f.ii. The Internet

Charitable organizations are increasingly turning to the Internet to publicize their organization and their objectives, and to provide a means to receive donations from contributors. According to Sean Bailey of *Philanthropy Journal*, the "Web has presented

1 organizations, large and small, a way to use E-mail and Web sites to broaden their
2 potential universe of supporters." The World Wildlife Fund began its site in 1996 and
3 now it provides reports on WWF projects around the world, membership information,
4 and a secure credit card payment system for those wishing to donate to the fund. The
5 Internet allows Amnesty International to publish and distribute information to individuals
6 throughout the world at a fraction of the cost of publishing and mailing the same amount
7 of information. According to Roberto Quezada of Amnesty International USA, "Our site
8 has over 2,000 pages and gets around 1,000 hits per day. It would cost us a fortune to
9 publish and mail that to 1,000 people every day." Charitable organizations are
10 increasingly using the Internet to offer potential contributors the opportunity to make
11 their donations on-line. A Boston Girl Scouts troop sold cookies through an on-line
12 cookie shop, allowing purchasers the opportunity to pay for Girl Scout Cookies with
13 their credit card. According to recent *New York Times* article (September 14, 1999), one
14 on-line campaign had a response rate "far greater than that for targeted mailings." The
15 campaign *Our Forests* ended up delivering 187,000 E-mail messages on this issue to
16 Vice President Gore. [Martinez, Michael J., "Web Users: Click Here to Help!,"
17 *ABCNEWS.com*, February 11, 1998] [Fairley Raney, Rebecca, "New Audience for
18 Advocacy Groups in the Internet," *The New York Times*, September 14, 1999].

19 In September of 1995, the American Red Cross added updated pictures on
20 hurricane damage to its site and found that the page had generated 30 percent of that
21 month's calls to the group's toll-free telephone line, and most of the callers offered
22 contributions. Later that winter, 600 people answered the Red Cross site's request for
23 help in setting up home pages for local chapters. Literacy Volunteers of America, which
24 promotes adult literacy, reported that its web page generated a \$5,000 donation, and
25 the gift of a computer. Another nonprofit group, Impact Online, was created to help

1 charitable organizations utilize the Internet for fund raising. [Allen, Mike, "Now, It's
2 Philanthropy Surfing on Internet," *The New York Times*, May 13, 1996].

3 The Chicago Sun-Times recently reported that the "latest trend in solicitations is
4 the Internet, where donors can give money directly or by shopping at a charity mall in
5 cyberspace." According to a recent study, more than 3.5 million have already given to a
6 nonprofit organization over the Internet. Experts believe that making charitable
7 donations online will continue to grow, particularly as donors become more comfortable
8 with using credit cards over the Internet. According to Dan Langan, a spokesman for
9 the National Charities Foundation, "the Internet is going to be the future of charitable
10 donations." Former Presidential candidate, Senator Robert Dole, has spearheaded the
11 drive to build the World War II Memorial in Washington, DC. During recent television
12 appearances, Senator Dole has referred potential supporters to the memorial's web site
13 where they can make donations directly. [Zimmerman, Stephanie, "Charities Shift to the
14 New Age of E-Donations," *Chicago Sun Times*, November 18, 1999].

15 Political organizations actively seeking donations are also turning to the Internet.
16 In March of 1997, Common Cause launched the Internet component of their Project
17 Independence, a campaign to collect thousands of E-mail "signatures" to support
18 campaign finance reform. Former advisor to President Clinton, Dick Morris, asks visitors
19 to his web site to vote yes or no on different political issues. These votes are then
20 converted into E-mail messages that are then sent to elected officials. Morris recently
21 wrote that his site had send more than 82,000 E-mail messages to the White House
22 during a one week period. [Richtel, Matt, "Nonprofit and Watchdog Groups Work the
23 Net," *The New York Times*, May 24, 1997]. [Fairley Raney, Rebecca, "In E-Politics,
24 Clinton's Ex-Advisor Still Plays by His Rules," *The New York Times*, November 12,
25 1999].

1 Despite the growth in Internet use by charitable organizations, it still has not
2 replaced traditional methods of fund-raising. Amnesty International still sends out
3 “hundreds of letters every day” according to Roberto Quezada. Some others still believe
4 that the fund-raising potential of the Internet is being over-estimated. According to
5 Kevin Ronnie, a field director of the National Committee for Responsive Philanthropy,
6 “It’s [the Internet] is being far oversold for its state of development...Fund-raising is
7 historically a phenomenon of face-to-face contact.” [Martinez, Michael J., “Web Users:
8 Click Here to Help!,” *ABCNEWS.com*, February 11, 1998].

9 **f.iii. Shifts from Other Mail Categories**

10 Another factor that may be positively influencing the volume of Standard A
11 Nonprofit mail is declining volume of Periodicals Nonprofit mail. As circulation of
12 nonprofit magazines and newsletters declines, nonprofit organizations may find it more
13 effective to solicit funds through direct mail sent via Standard A. Furthermore, volume
14 may be shifting from Standard Nonprofit ECR as part of more precise targeting.

15 **4. Volume Forecast**

16 **a. Total Standard A Nonprofit Volume**

17 A single econometric equation is estimated for all of Standard A Nonprofit Mail.
18 The volume forecasts for Standard A Nonprofit (and Standard A Nonprofit ECR
19 discussed in the next section) are made using the overall econometric equation plus a
20 net trend factor that captures differences in the growth rates of these two subclasses
21 over the past five years. The net trend component of other factors in Table 13
22 contributed a 5.35 percent increase in Standard A Nonprofit mail volume. In contrast,
23 the net trend component of other factors for Nonprofit ECR mail is a negative 13.75
24 percent (see Table 14). It is projected that these influences will continue. Therefore, in
25 addition to the effect of changes in the econometric variables, the volume forecast of

Standard A Nonprofit and Standard A Nonprofit ECR mail include a net trend factor, equal to the annualized five-year net trend.

For Standard A Nonprofit mail, the five-year mechanical net trend is 1.0105, or just over one percent per year. This annual net trend factor is included in the volume forecast along with the econometric factors. Table 13A shows that projecting the influence of the econometric and net trend factors yields a before-rates volume forecast of 11,510.795 million pieces of Standard A Nonprofit mail in the Test Year. At the rates proposed by the Postal Service, the projection is 11,425.579 million pieces.

Table 13A
Volume Forecast of Standard A Nonprofit Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	10,933.949	10,933.949
Non-Rate Impact	5.90%	5.90%
Postal Rate Impact	-0.59%	-1.33%
Test Year Volume (Millions)	11,510.795	11,425.579

b. Forecasts of Nonautomated Volume

The before-rates forecast for nonautomated Standard A Nonprofit mail for the 2001 Test Year is 2,923.601 million pieces. The after-rates Test Year volume forecast is 3,040.715 million pieces.

c. Forecasts of Automated Volume

The forecast for automated Standard A Nonprofit mail, if present rates are continued, is 8,587.194 million pieces. The forecast if the recommendations of the Postal Service are adopted is 8,384.865 million pieces.

F. Standard A Nonprofit ECR Mail

1. Definition

Standard A Nonprofit ECR mail has the same general characteristics as mail sent in the Nonprofit subclass, except that ECR mail must satisfy higher density requirements.

2. Volume History

Figure 14 shows the volume history of Standard A Nonprofit ECR mail, which was known as nonprofit carrier-route mail prior to classification reform. Following the introduction of the carrier-route discount for nonprofit mail in 1980, volume grew rapidly, rising to 3.0 billion pieces in 1995. Volume fell to 2.6 billion pieces in 1998 but recovered to 2.9 billion pieces in 1999.

Volume per adult grew every year from 1980 to 1995, with the exceptions of 1988 and 1993. In recent years, the percentage change in volume per adult has been somewhat erratic for this subclass. Volume per adult declined more than five percent in 1996 and nearly nine percent in 1998, and then gained more than nine percent in 1999. In 1999, Standard A Nonprofit ECR volume per adult was 15.6 pieces, about seven percent less than the peak of 16.8 pieces per adult in 1992.

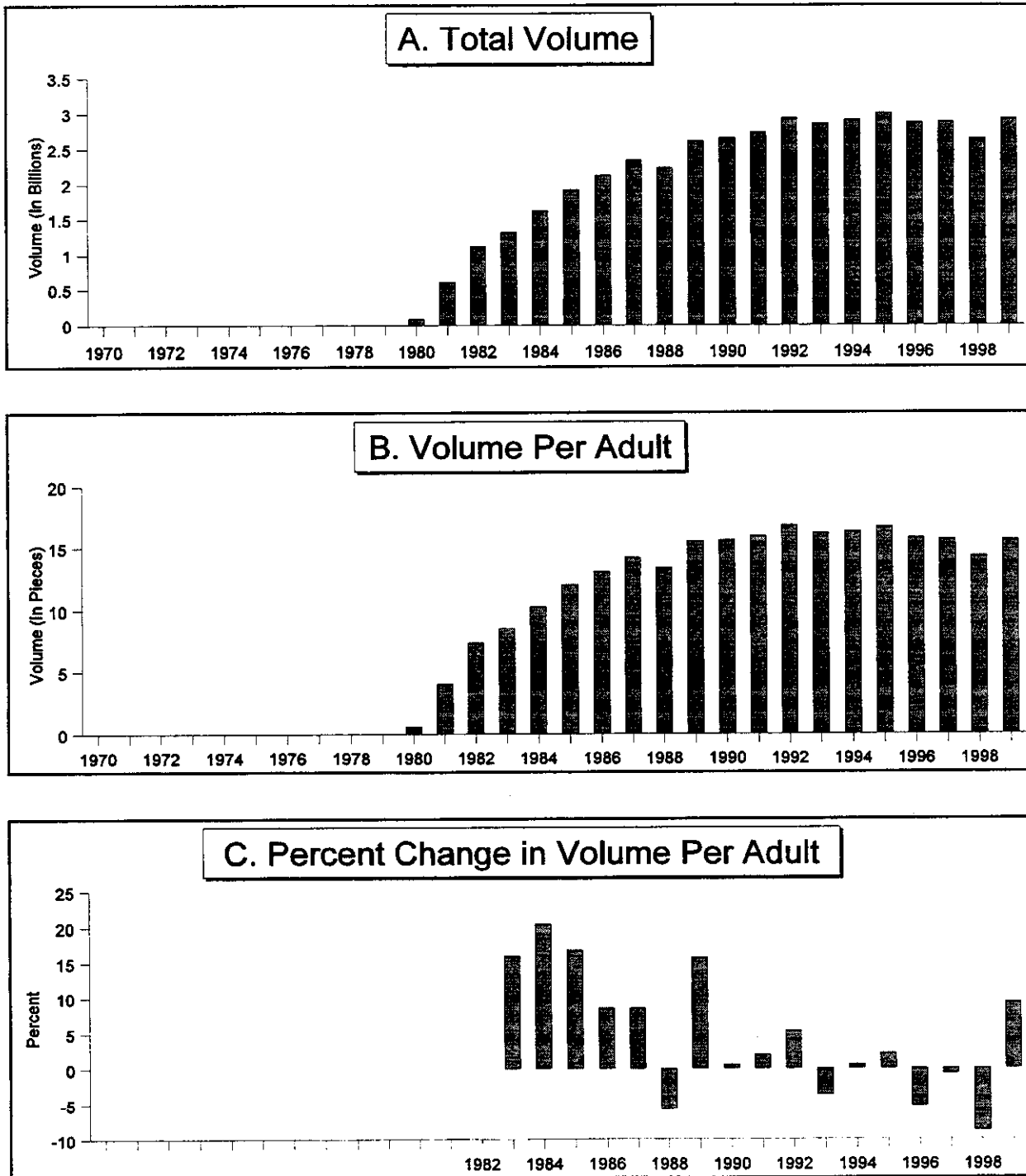
3. Factors Affecting Volume

The same elasticities are used for Standard A Nonprofit ECR mail as were used for Standard A Nonprofit mail because Mr. Thress's econometric analysis was performed on total bulk nonprofit mail volume.

a. Own price

Table 14 shows that the real price of Standard A Nonprofit ECR mail decreased 1.1 percent from 1994 to 1999. Applying the own-price elasticity for total Standard A

Figure 14
Standard Nonprofit ECR Mail



1 Nonprofit ECR mail of -0.162 to this price increase yields an increase in volume of 0.19
2 percent.

3 **b. Consumption**

4 Real consumption expenditures per adult increased 14.4 percent over the past
5 five years. It is estimated that a one percent increase in this variable leads to a 0.772
6 percent increase in total Standard A Nonprofit mail volume. Applying this elasticity for
7 the enhanced carrier route portion of total nonprofit mail means that the growth in
8 consumption contributed 10.93 to the volume of Standard A Nonprofit ECR mail.

9 **c. Adult Population**

10 Growth in adult population over the past five years contributed 4.64 percent to
11 the volume of Standard A Nonprofit ECR mail.

12 **d. Fall Election Year**

13 The fall election year dummy was discussed in the previous section on Standard
14 A Nonprofit mail. The estimated elasticity of this variable is the same for Standard A
15 ECR mail as is the estimated impact on volume. Therefore, as shown in Table 14, the
16 fall election year dummy contributed 1.05 percent to Standard A Nonprofit ECR volume.

17 **e. Spring Election Year**

18 The spring election year dummy variable was discussed in the section on
19 Standard A Nonprofit mail. The estimated elasticity of this variable for Standard A
20 Nonprofit ECR mail is the same as for nonprofit mail. As shown in Table 14, this
21 variable reduced Standard A Nonprofit ECR mail by 1.03 percent.

22 **g. Other Factors**

23 Table 14 shows that other factors were responsible for a 14.65 percent reduction
24 in Standard A Nonprofit ECR mail volume. A principal consideration is that volume may
25 be shifting to Standard A Nonprofit mail, consistent with the general move by

advertisers to more targeted mailings that can be expected to achieve higher response rates.

Table 14
CONTRIBUTIONS TO CHANGE IN
STANDARD NONPROFIT ECR VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	-1.1%	-0.162	0.19%
Consumption	14.4%	0.772	10.93%
Adult Population	4.66%	1	4.66%
Fall Election Year			1.05%
Spring Election Year			-1.03%
Other Factors			-14.65%
Total Change in Volume			1.11%

4. Volume Forecast

a. Total Standard A Nonprofit ECR Volume

As discussed in the section on Standard A Nonprofit, the forecast of Standard A Nonprofit ECR mail is made by combining econometric and non-econometric factors. The econometric factors are obtained from the single econometric equation for Standard A Nonprofit mail. The non-econometric factors are captured through inclusion of a net trend factor, equal to the five-year mechanical net trend of 0.970843 as shown in Table A-17 of the Technical Appendix. Subtracting this net trend from 1.0 gives an average annual volume decline of about 2.92 percent per year over the past five years. It is expected that the non-econometric factors will continue to have the same influence

on Standard A Nonprofit ECR mail in the future as they have had in the recent past. Therefore, the five-year mechanical net trend is included in the volume forecast of Standard A Nonprofit ECR mail.

Table 14A shows that the Base Year volume of Standard A Nonprofit ECR mail is 2,940.701 pieces. Applying the impact of changes in the econometric variables and the net trend factor to the Base Year volume, yields a before-rates Test Year volume forecast for Standard A Nonprofit ECR mail is 2,907.206 million pieces. At rates proposed by the Postal Service, the volume is projected to be 2,851.875 million pieces, shown as the after-rates forecast in Table 14A.

Table 14A
Volume Forecast of Standard A Nonprofit ECR Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	2,940.701	2,940.701
Non-Rate Impact	-2.55%	-2.55%
Postal Rate Impact	1.45%	-0.48%
Test Year Volume (Millions)	2,907.206	2,851.875

b. Forecasts of Nonautomated Volume

The forecast for nonautomated Standard A Nonprofit ECR mail, if present rates are continued, is 2,565.620 million pieces. The forecast if the recommendations of the Postal Service are adopted is 2,514.220 million pieces.

c. Forecasts of Automated Volume

The forecast for automated Standard A Nonprofit ECR mail, if present rates are continued, is 341.586 million pieces. The forecast if the recommendations of the Postal Service are adopted is 337.655 million pieces.

VI. STANDARD B MAIL

A. General Characteristics

1. Standard B Mail as an Inexpensive Alternative

Standard B mail is a less expensive alternative for sending eligible mail pieces weighing between one and 70 pounds that are not sent as Priority Mail and are not accepted under Periodicals restrictions. In general, Standard B mail tends to contain tangible objects (e.g. merchandise, household items) rather than correspondence. Standard B can also be used as a less expensive means of sending educational, cultural, and recreational material such as books, manuscripts, films, and records without regard to minimum weight restrictions. Standard B mail is subject to deferred service, with no guaranteed delivery schedule. Return and forwarding are made at an additional charge only upon request of the sender or addressee.

2. Standard B Rates and Volume

In general, Standard B mail rates are lower than First-Class, Priority and Express Mail, due primarily to the fact that Standard B mail is not handled as expeditiously.

The four subclasses in Standard B mail are: Parcel Post, Bound Printed Matter, Special Rate, and Library Rate. Rates for the first two subclasses are determined by weight and distance to destination. Rates for the last two subclasses are determined by weight only without regard to distance.

Parcel post rates are based on eight distance zones and charges varying by the pound from two pounds or less to the 70-pound weight limit. In 1981, an intra-BMC discount per piece became effective for parcels sent and delivered within the same Bulk Mailing Center (BMC) service area. Also in 1981, a surcharge per piece was placed on parcels sent and delivered outside the same BMC service area, if the parcels are non-machinable and must be handled manually because of excessive size, weight density,

1 fragility or packaging. Bulk mailings of 50 pieces or more are permitted. A destination
2 BMC rate structure was introduced in 1991 for bulk mailers, and in 1999 discounts were
3 also introduced for bulk mailing entered at the destination SCF and DU.

4 Bound printed matter is just that, mail which is bound and printed and weighs
5 between one and fifteen pounds. The content may consist of advertising, promotional,
6 directory, or editorial material. Prior to 1999, this subclass had a maximum weight of ten
7 pounds.

8 Special rate mail consists largely of books, printed matter, and sound recordings.
9 Rates are based on the weight of each addressed piece without regard to zone. Mail
10 can be entered as single-piece or in one of two bulk presort categories. Presort level A
11 is for parcels sorted to the 5-digit level and reduces the current price of the first pound
12 of a single-piece from \$1.13 to \$0.64. Presort level B, which is to the BMC level,
13 reduces the current price of the first pound to \$0.95.

14 Library mail currently receives a rate identical to special mail. Prior to R97-1,
15 library mail received a preferred rate and was the least expensive of the four
16 subclasses in most cases.

17 In Postal Year 1999, the four subclasses of what is now Standard B mail had a
18 combined volume of 1.04 billion pieces. Bound printed matter is the largest subclass by
19 volume, (489 million pieces), followed by Parcel Post (326 million pieces), Special Rate
20 (200 million pieces), and Library Rate (28 million pieces) in 1999.

21 **B. Parcel Post Mail**

22 **1. Definition**

23 Parcel post mail is Standard B mail not eligible for lower rates under one of the
24 other three Standard B mail categories. Packages weighing between one and 70

1 pounds and not exceeding 130 inches in length plus girth are currently accepted for
2 Parcel Post.

3 **2. Volume History**

4 **a. Total Parcel Post Volume**

5 As shown in Figure 15, Parcel Post volume declined from 562 million pieces in
6 1970 to 207 million pieces in 1980, or by 63 percent. Volume continued to decline in
7 the 1980s, falling to 121 million pieces in 1989. By 1994, however, volume had
8 increased to 259 million pieces, more than double the 1989 volume. Parcel post
9 volume has continued to increase over the last five years, reaching 326 million pieces in
10 1999.

11 **b. Inter-BMC, Intra-BMC, and DBMC Parcel Post Volumes**

12 Chart H shows inter-BMC, intra-BMC and DBMC volumes from 1988 through
13 1999. As the chart shows, inter-BMC volume has declined over this time period, with a
14 particularly noticeable drop in 1995 and 1996, partly as a result of the increase in rates
15 following the R94-1 case. Intra-BMC volume increased from 1990 to 1994, but has
16 declined since then so that volume in 1999 is essentially the same as in 1988. In
17 contrast, DBMC volumes have grown rapidly since the introduction of the DBMC
18 discount in 1991. After rapid growth in the first few years after its introduction, DBMC
19 volume growth has slowed, but remains impressive. In 1999, more than two-thirds of
20 Parcel Post volume was shipped DBMC.

Figure 15
Standard Parcel Post

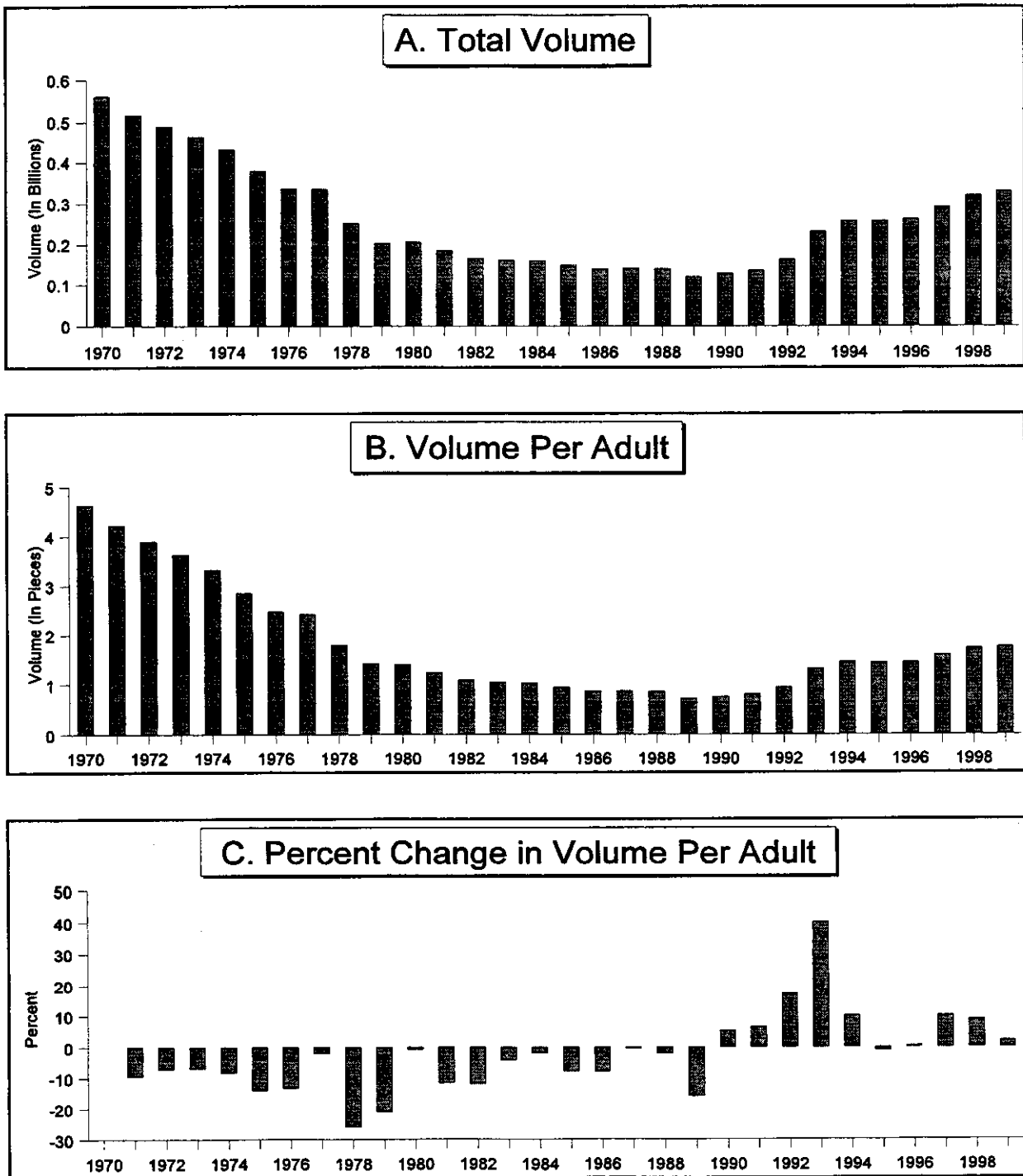


Chart H
Inter-BMC, Intra-BMC, and DBMC Parcel Post Volumes

Standard B Parcel Post						
	Inter-BMC		Intra-BMC		DBMC	
Year	Volume	Percentage	Volume	Percentage	Volume	Percentage
1988	106.812	75.2%	35.163	24.8%	0	0%
1989	90.440	74.8%	30.419	25.2%	0	0%
1990	99.935	77.6%	28.765	22.4%	0	0%
1991	99.671	72.0%	33.803	24.4%	4.983	3.6%
1992	93.184	56.7%	48.572	29.6%	22.447	13.7%
1993	87.431	37.5%	44.163	19.0%	101.252	43.5%
1994	89.433	34.5%	49.802	19.2%	119.737	46.2%
1995	77.106	29.8%	47.895	18.5%	133.844	51.7%
1996	62.586	23.8%	41.209	15.7%	158.699	60.5%
1997	63.758	21.9%	43.073	14.8%	184.818	63.4%
1998	64.628	20.2%	42.315	13.2%	213.048	66.6%
1999	62.263	19.1%	35.863	11.0%	227.895	69.9%

3. Factors Affecting Volume

Table 15 shows that total Parcel Post volume increased by 25.89 percent over the past five years. The present section discusses the factors that have influenced Parcel Post volume during this five-year period.

a. Own-Price

The estimated own-price elasticity of Parcel Post volume in the period is -1.229. As shown in Table 15, the real price of Parcel Post increased 16.3 percent over the past five years. Applying the estimated long-run price elasticity to this change in real price leads to a volume decline of 17.36 percent, as shown in Table 15.

b. Cross-Prices

The volume of Parcel Post is also influence by the price of UPS, an important competitor. As shown in Table 15, the estimated cross-price elasticity between Parcel

1 Post volume and UPS price is 0.849. Applying this elasticity to the 11.8 percent real
2 increase in UPS prices over the past five years leads to a 9.90 percent increase in
3 Parcel Post volume.

4 In addition to the effect of the real price of the average of all UPS rates, UPS
5 instituted a residential surcharge on packages delivered in residential areas in February
6 of 1991, which had a separate crossover-type effect on Parcel Post that was
7 pronounced because Parcel Post is used most heavily by residential customers. The
8 UPS residential surcharge increased in real terms by 50.6 percent over the past five
9 years. The elasticity of Parcel Post volume with respect to the UPS residential
10 surcharge is 0.417 meaning that the 50.6 percent increase in the surcharge led to a
11 18.54 percent increase in the volume of Parcel Post.

12 Finally, Parcel Post volume is also affected by the price of Priority Mail. It is
13 estimated that a one percent increase in the real price of Priority Mail leads to a 0.148
14 percent increase in Parcel Post volume. Therefore, the 1.5 percent real increase
15 Priority Mail price over the past five years contributed 0.22 percent to Parcel Post
16 volume.

17 **c. Retail Sales**

18 Parcel post volume is found to be strongly related to the level of retail sales per
19 adult, a reflection of the fact that much of the volume of this subclass consists of
20 shipments of merchandise from businesses to households. The elasticity of Parcel
21 Post volume with respect to real retail sales per adult is 0.749. Over the 1994 to 1999
22 period, real retail sales per adult increased 22.2 percent. This increase, after applying
23 the elasticity of 0.749, is estimated to have contributed a 16.19 percent increase in
24 Parcel Post volume.

d. Adult Population

Increases in adult population were responsible for a 4.63 percent increase in the volume of Parcel Post mail over the past five years.

e. UPS Man-Days Lost to Strike

Occasional labor strikes by UPS workers contribute to Parcel Post volume as mailers shift activity from UPS to other carriers. The rather lengthy strike in 1997 contributed to Parcel Post volume, but by 1999 those effects have largely disappeared. However, there was also another brief strike in 1994. Therefore, the 1994 to 1999 period which is examined in Table 15 began in a strike year and ended in a non-strike year. This had the effect of reducing Parcel Post volume by 0.72 percent.

f. Other Factors

Table 15 shows that in addition to the effects of variables considered above, other factors were responsible for a 5.51 percent decrease in the volume of Parcel Post mail from 1994 to 1999.

i. Competition from Other Package Delivery Firms

In past years, competition from other package delivery firms has been a major reason for declines in Parcel Post volume. The principle competitor has been United Parcel Service (UPS), but other firms have entered the package delivery market. The impact of competition with UPS on Parcel Post volume is econometrically measured by including the UPS price and the UPS residential surcharge in the Parcel Post demand equation. Yet another factor explaining Parcel Post volume is non-price competition with UPS and other package delivery firms. In some instances, private delivery firms make better use of computer technology, provide free tracking, and promise multiple

1 attempts at delivery. These service additions are not necessarily reflected in price and,
2 therefore, not included as an econometric factor to explain Parcel Post volume.

3 Table 15
4 CONTRIBUTIONS TO CHANGE IN
5 PARCEL POST VOLUME FROM 1994 to 1999
6

7	8	9	10	11
	<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
10	Own price	16.3%	-1.229	-17.36%
11	Cross Price			
12	Priority Mail	1.5%	0.148	0.22%
13	UPS	11.8%	0.849	9.90%
14	UPS Residential Surcharge	50.6%	0.417	18.54
15	Retail Sales	22.2%	0.749	16.19%
16	Adult Population	4.66%	1	4.66%
17	UPS Man-Days lost to Strike			-0.72%
18	Other Factors			-5.51%
19	Total Change in Volume			25.89%

20
21 Parcel post volume is influenced by the trend in package shipments over time. In
22 1998, Federal Express, UPS and Parcel Post combined accounted for over 90 percent
23 of the domestic package market. Thus, the pattern of shipments of these three carriers
24 over time should provide a reasonable appraisal of the entire domestic package market
25 in the United States. Between 1981 and 1998, domestic package shipments for UPS,
26 Federal Express and the Postal Service increased from 1.6 million to 3.6 million pieces.
27 These shipments include ground, three day, two day and overnight for both UPS and

1 Federal Express, but only ground parcel shipments are included for the Postal Service.
2 [Colography Group (1999) and FedEx annual reports]

3 Between 1992 and 1998, ground parcel shipments did not increase appreciably.
4 Total ground parcel package shipments increased from just under 3 billion to 3.2 billion
5 pieces, an increase of just under 8 percent. Over the same period, the United Parcel
6 Service maintained its dominant share of the ground parcels market, although the size
7 of its market share has declined somewhat, falling from 86.2 to 75.5 percent of the
8 market. RPS and the Postal Service were able to expand their market shares, climbing
9 from a combined 10.1 percent to 20.8 percent of the market.

10 As discussed in later sections, the rapid growth of the Internet is stimulating an
11 increase in the volume of parcel mail. It appears that the Postal Service is gaining a
12 relatively large share of this new business. According to a recent report by CNN, over
13 the Christmas 1998 holiday season, UPS delivered more than half of all online
14 purchases. The Postal Service handled a third, followed by Federal Express. [Morris,
15 Jim. "Package Deliverers Say It's Time to Wrap It Up,"
16 <http://cnn.com/1999/US/12/17/holiday.shipping/>, December 17, 1999].

17 ii. Just-in-time Production Methods

18 The spread of just-in-time (JIT) production methods means that companies
19 require smaller inventories, with more frequent shipments of raw materials and
20 intermediate goods. This in turn can affect the business demand for package delivery
21 since a portion of these shipments may best be accomplished through small parcel
22 service either on the ground or in the air. One study found that many companies are
23 becoming dependent on air express shipments for materials that were formerly
24 inventoried. [Helms, Marilyn M. "A Structure Conduct Performance Analysis of the

1 Expedited Small Package Industry," *Transportation Quarterly*, January 1989]. In
2 addition, the growth of JIT methods places an increased demand on carriers to
3 guarantee delivery. This does not necessarily mean faster delivery, but rather assured
4 delivery. JIT methods require that raw materials arrive at the plant close to the moment
5 of production. Production is scheduled in advance, so planners know how much of
6 what items are needed when. JIT can be accommodated through ground truck service
7 that guarantees delivery. James Cooke argues that time definite freight makes sense
8 in many instances. [Cooke, James. "Do You Really Need It Overnight?" *Traffic*
9 *Management*, December 1991].

10 A survey conducted by Northeastern University Professors Millen and Lieb of
11 *Traffic Management* readers in 1990 found that 70 percent of the respondents had or
12 planned to implement JIT programs. Over one fourth of the responding companies had
13 fully operational programs at the time of the survey. ["Why U.S. Companies Are
14 Embracing JIT," *Traffic Management*, November 1990]. Another survey, by the
15 National Association of Purchasing Management, indicated that as many as 26 percent
16 of respondents purchased materials "hand to mouth" in January 1995, compared to 4
17 percent in February 1970. [Allen, Donald. "Change in Inventory Management and the
18 Business Cycle," *Review of the Federal Reserve Bank of St. Louis*, July/August 1995].
19 One analyst, John Schulz, has predicted that more than half of the inbound
20 transportation deliveries by the year 2000 will be done on a just-in-time basis. [Schulz,
21 John, D. "LaLonde: Technology Helps JIT, Direct Shipments Soar." *Traffic World*, April
22 15, 1996].

23

24

1 **iii. Growth of Mail Order**

2 The growth of mail order sales over time has also had an effect on small
3 package delivery volumes. Catalog purchases, direct mail to lists, telephone sales and
4 other forms of direct marketing have grown, which has increased the demand for
5 package delivery. The main beneficiary of the direct marketing boom has been UPS.
6 For example, most of J.C. Penny catalog sales are handled through UPS. However,
7 this growth in mail order has had an impact throughout the package delivery industry.

8 Sales from catalogs have been increasing throughout the 1990s. Both
9 consumer and business-to-business catalog sales have increased by around 25
10 percent from 1990 to 1995, according to *Catalog Age*. ["By the Numbers," *Catalog Age*,
11 July 1996]. Overall, catalog sales are expected to increase by 45 percent in the 1990s.
12 According to The Direct Marketing Association, the percentage of the population who
13 ordered by mail or phone has increased from 45 percent in 1985 to 67 percent in 1998.

14 **iv. Internet and Other New Media Sales**

15 The growing influence of the Internet has already been noted in this testimony.
16 Growth in the Internet provides an additional avenue through which goods can be
17 purchased and, naturally, represents an additional source of parcel volume, regardless
18 of whether these parcels are shipped through the Postal Service, UPS, or by other
19 means. While recent growth in the Internet has been dramatic, predicting the actual
20 level of Internet use and projecting just how long this growth can be sustained is
21 difficult. According to Nielsen/NetRatings, in November 1999 there were 118.4 million
22 people with Internet access in the United States. [NUA. "Online Shopping Fever Grips
23 US Users," *NUA Surveys*, December 17, 1999]. Meanwhile, Forrester Research
24 estimates that 17 million US households will be shopping online by the end of 1999,

1 and an estimated 7 million households will make their first online purchase this year.

2 [NUA. "17 Million US Households to Shop Online in '99," *NUA Surveys*, September 29,
3 1999].

4 In terms of actual retail sales through the Internet, estimates vary by research
5 firm. According to the Boston Consulting Group, online retailing will generate over \$36
6 billion in revenue in 1999, up from \$14.9 billion in 1998. ["Online Retailing to Top
7 USD36 Billion in 1999," *NUA Internet Surveys*, <http://www.nua.ie/surveys/>, July 19,
8 1999]. Forrester Research projects that total retail sales on the Internet will top \$20.2
9 billion in 1999. [NUA. "17 Million US Households to Shop Online in '99," September 29,
10 1999]. Jupiter Communications projects that consumers will spend \$11.9 billion on the
11 Internet in 1999, rising to nearly \$41 billion by 2002. [Jones Thompson, Maryann. "Net
12 Steals Billions From Offline
13 Retailers," <http://cnn.com/TECH/computing/9908/06/netsteal.idg/>, August 6, 1999].

14 Despite the rapid growth of online retailing, business-to-business sales account
15 for the lion's share of Internet transactions. David Alschuler, vice president of e-
16 business and enterprise applications at the Aberdeen Group, "pegs business-to-
17 business at 10 to 20 times the business-to-consumer market." Meanwhile, Forrester
18 Research estimates that Internet sales between businesses amounted to \$43 billion in
19 1998, over five times the retail total. Forrester also projects that business-to-business
20 sales will climb to \$1.3 trillion, or 9.4 percent of all business-to-business sales, by 2002.
21 [Tedeschi, Bob. "Real Force in E-Commerce is Business-to-Business Sales," *New York*
22 *Times*, January 5, 1999].

23 To the extent that growth continues at its current high rate, shipments of goods
24 purchased through the Internet should follow this growth. This growth has not gone

1 unnoticed by direct marketers. ActivMedia predicts that online sales will account for 30
2 percent of revenue generated by the direct marketing industry by 2000, up from 12
3 percent in 1998. ActivMedia also estimates that two-thirds of new online customers are
4 also first time customers of direct marketers. [NUA. "Direct Marketers to Lead Web
5 Marketing," *NUA Surveys*, <http://www.nua.ie/surveys/>, August 4, 1999].

6 From the perspective of consumers, a recent survey by the Direct Marketing
7 Association reports that 22 percent of polled consumers in 1998 indicated that they
8 have purchased a product or service via the Internet, World Wide Web, or other online
9 service. The Association reports that by 2002, consumers will spend a projected \$52
10 per year in online/Internet access services which is triple the amount spent in 1996.
11 [Direct Marketing Association, *Statistical Fact Book*. New York: The Direct Marketing
12 Association, 1999].

13 Now that companies such as Microsoft, Wink Communications, U.S. West and
14 AOL are starting to offer interactive TV, or iTV, a growing number of consumers are
15 using their television sets and remote control to shop. According to a recent article in
16 *Catalog Age*, "Early statistics show that some consumers are more than willing to buy
17 products via the TV. Microsoft's WebTV . . . found that 49% of its nearly 1 million
18 subscribers have purchased a service or product online in the past year." [Oberndorf,
19 Shannon. "Electronic Catalog: Is It Finally Time for PC/TV?" *Catalog Age*,
20 <http://www.catalogagemag.com/>, November 1999]. Datamonitor estimates that more
21 than 11 million households worldwide already subscribe to interactive television, and
22 that 67 million in the US and Europe will have access by 2003. [Oberndorf, *Catalog*
23 *Age*, November 1999].

1

8

9

16

17

18

24

1 subclass volume equation. The non-econometric factors are drawn from the discussion
2 of other factors and measured as a five-year mechanical net trend.

3 Separate net trends are calculated for DBMC and non-DBMC Parcel Post, where
4 the non-DBMC net trend is used in the forecasts of both inter- and intra-BMC volume.
5 The net trend is calculated by using the subclass elasticities to make a volume forecast
6 of each component (DBMC and non-DBMC Parcel Post), using as the base volume the
7 component volume five years earlier. For each component, the forecasted volume is
8 compared to the actual volume. The mechanical net trend is the annual trend, when
9 applied to the volume forecast, that yields a forecasted volume in 1999 equal to the
10 actual category volume in that year.

11 In addition to calculation of the five year mechanical net trend, further analysis is
12 performed to determine whether differences between actual and forecasted volume are
13 reflective of a trend or of one-time events which may not be expected to re-occur in the
14 future. An example of such an event would be the UPS strike. Over the five-year
15 period ending in 1999, however, the impact of the strike is likely to be largely offsetting,
16 e.g., Parcel Post volume increased during the strike, but by 1999 the positive impacts of
17 the strike had subsided. Examination of volume data and review of recent
18 developments aid in the determination that the five-year mechanical net trends of each
19 category can be reliably included in the volume forecasts.

20 Combining the Test Year forecasts of inter-BMC, intra-BMC, and DBMC Parcel
21 Post (shown below) yields a before-rates forecast for total Parcel Post of 378.447
22 million pieces and an after-rates forecast of 374.096 million pieces.

23

24

b. Volume Forecast for Inter-BMC

The Base Year volume of inter-BMC Parcel Post is 62.263 million pieces. The volume forecast for this category includes as part of the non-rate impact, the five-year mechanical net trend for non-DBMC Parcel Post volume, expressed in annual terms. The annual net trend multiplier is 0.888596, or -11.14 percent per year, as shown in Table A-19 in the Technical Appendix. Adding in the impact of changes in real rates between the Base Year and the Test Year yields a before-rates forecast for inter-BMC Parcel Post of 51.620 million pieces.

Table 15A
Volume Forecast of Inter-BMC Parcel Post

	Before-Rates	After-Rates
Base Year Volume (Millions)	62.263	62.263
Non-Rate Impact	-15.13%	-15.13%
Postal Rate Impact	-2.31%	-9.85%
Test Year Volume (Millions)	51.620	47.638

The after-rates volume forecast uses the same Base Volume and same non-rate impacts (including the net trend) as used in the before-rates volume forecast. The postal rate impact differs and reflects the rates proposed by the Postal Service for inter-BMC Parcel Post and Priority Mail. Combining the non-rate and postal rate impacts yields an after-rates Test Year volume forecast of 47.638 million pieces.

c. Volume Forecast for Intra-BMC

Table 15B presents the Test Year forecasts for intra-BMC Parcel Post. The non-rate impact includes the mechanical net trend for non-DBMC Parcel Post volume as

1 was done for inter-BMC Parcel Post. Applying the non-rate and postal rate impacts,
2 assuming no change in postal rates, yields a before-rates volume forecast of 28.817
3 million pieces.

4 **Table 15B**
5 **Volume Forecast of Intra-BMC Parcel Post**

	Before-Rates	After-Rates
Base Year Volume (Millions)	35.863	35.863
Non-Rate Impact	-15.13%	-15.13%
Postal Rate Impact	-5.32%	-13.74%
Test Year Volume (Millions)	28.817	26.254

11
12 **d. Volume Forecast for DBMC**

13 The volume forecast for BMC Parcel Post is made using the estimated
14 elasticities from the Parcel Post volume equation, as was done for inter- and intra-
15 DBMC. However, a different net trend is used, equal to the five-year mechanical net
16 trend (expressed on an annual basis) of 1.089687, or about 8.97 percent per year, as
17 shown in Table A-20 of the Technical Appendix.

18 Table 15C shows that the Base Volume of DBMC Parcel Post is 227.895 million
19 pieces. Non-rate factors, including the net trend, add 29.33 percent to volume between
20 the Base Year and the Test Year. In the before-rates case, the real decline in postal
21 rates adds 1.11 percent to volume, yielding a Test Year forecast of 298.009 million
22 pieces. In the after-rates forecast, the proposed real changes in DBMC Parcel Post
23 and Priority Mail rates combine to add 1.86 percent to DBMC volume, yielding an after-
24 rates forecast of 300.204 million pieces. The after-rates forecast exceeds the before-

1 rates forecast because of the shift of some volume from Priority Mail, in response to the
2 large proposed rate increase for that mail product.

3
4 **Table 15C**
5 **Volume Forecast of DBMC Parcel Post**

6	Before-Rates	After-Rates
7 Base Year Volume (Millions)	227.895	227.895
8 Non-Rate Impact	29.33%	29.33%
9 Postal Rate Impact	1.11%	1.86%
10 Test Year Volume (Millions)	298.009	300.204

11
12 **C. Standard B Bound Printed Matter**

13 **1. Definition**

14 Bound printed matter is advertising, promotional, directory or editorial material
15 which weighs between one and ten pounds and is permanently bound. The category
16 was formerly called catalogs. As in the case of Parcel Post, rates are determined by
17 weight and zone. Bulk mailings have been available since 1964 and accounted for over
18 90 percent of the volume of Bound Printed Matter volume in 1996. The pieces sent in a
19 bulk mailing must be identical except with special authorization. They must be permit
20 imprinted and or meter stamped and presorted according to ZIP Code.

21 **2. Volume History**

22 Bound printed matter is the largest subclass of Standard B Mail. After declining
23 in the early 1970s, Bound Printed Matter volume experienced rapid growth, increasing
24 from less than 0.6 pieces per adult in 1976 to 2.6 pieces per adult in 1999. The 1999
25 level is somewhat below the peak of 2.8 pieces per adult in 1996. Much of this long-
26 term growth in Bound Printed Matter volume is due to the mail order boom and the

1 expansion of the catalog industry. The bottom part of Figure 16 shows that double digit
2 percentage increases in volume per adult are not uncommon for this subclass, having
3 occurred as recently as 1994 and 1995.

4 3. **Factors Affecting Volume**

5 a. **Own-Price**

6 Table 16 shows that the real price of Bound Printed Matter increased 4.8 percent
7 over the past five years. The econometrically estimated long-run own-price elasticity for
8 Bound Printed Matter is -0.392. Applying this elasticity to the 4.8 percent increase in
9 real price yields a volume decline of 1.84 percent over the past five years.

10 b. **Income**

11 Income growth increased Bound Printed Matter volume by an estimated 9.52
12 percent. This is due to an increase in permanent income per adult of 7.1 percent over
13 the last five years combined with an estimated income elasticity of 1.327, as shown in
14 Table 16.

15 c. **Adult Population**

16 Growth in adult population contributed 4.66 percent to the volume of Bound
17 Printed Matter over the past five years.

18 d. **Z-Variable**

19 The pattern of volume growth of Bound Printed Matter is consistent with a market
20 penetration Z-variable. Over the past five years, the Z-variable explains a 13.64
21 percent increase in volume, as shown in Table 16.

Figure 16
Bound Printed Matter

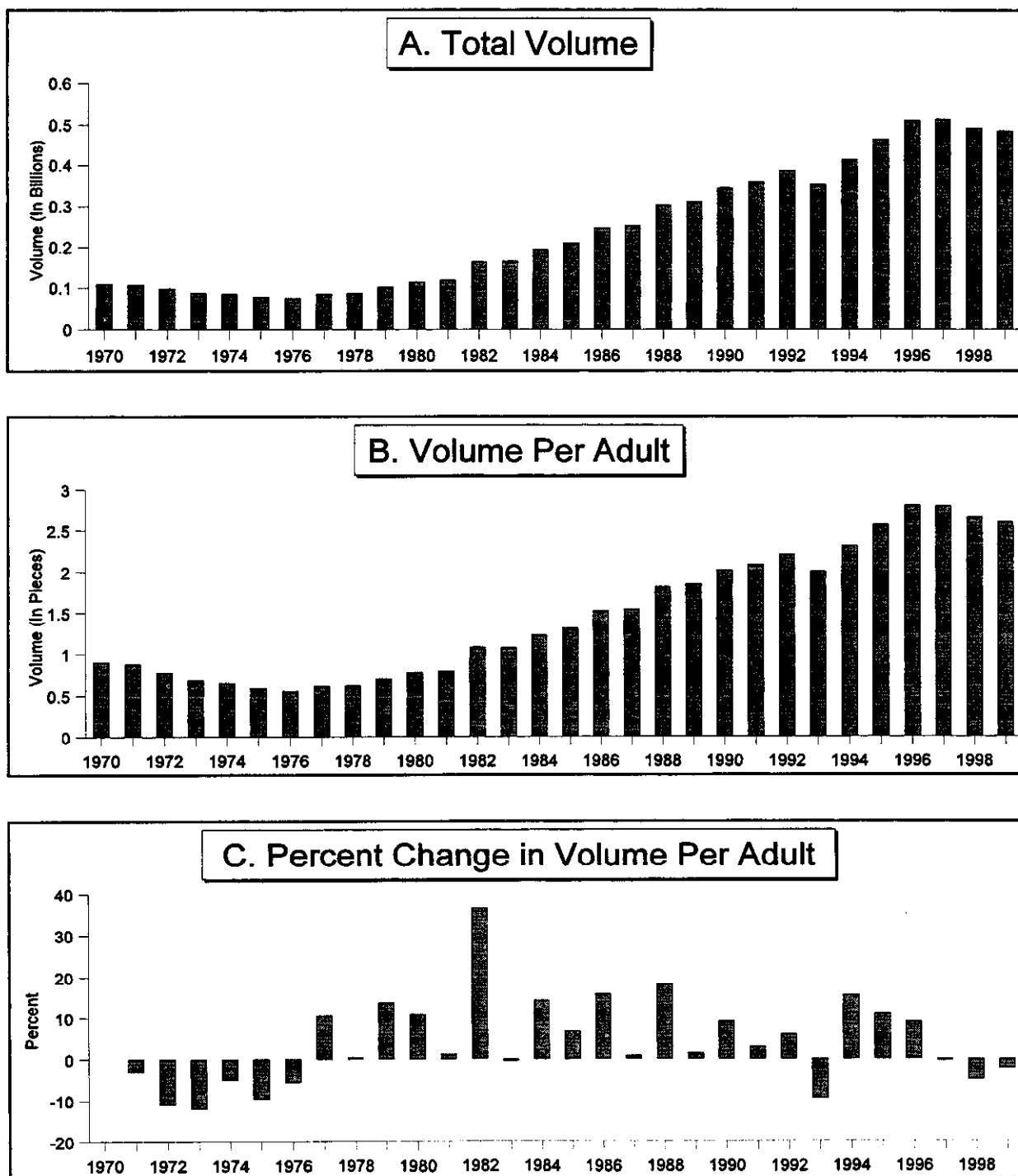


Table 16
CONTRIBUTIONS TO CHANGE IN
BOUND PRINTED MATTER VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	4.8%	-0.392	-1.84%
Permanent Income	7.1%	1.327	9.52%
Adult Population	4.66%	1	4.66%
Z-Variable			13.64%
Sears Mailing Change			6.88%
Dummy Variable beginning in 1998q1			-10.83%
Other Factors			-3.77%
Total Change in Volume			18.26%

e. Sears Mailing Change

In 1993q2, Sears decided to stop sending its large catalog, which served to reduce Bound Printed Matter volume in 1994. Ultimately, Sears replaced its large catalog with smaller catalogs, many of which were also sent as Bound Printed Matter. This change in mailing strategy has the result of increasing Bound Printed Matter volume by 6.88 percent, as shown in Table 16.

f. 1998q1 Dummy Variable

Bound printed matter volume experienced a sudden decline beginning in 1998q1. This volume change is captured through inclusion of a dummy variable which explains a 10.83 percent decline in volume.

1 **g. Other Factors**

2 Table 16 shows that over the past five years, the total change in Bound Printed
3 Matter volume was 18.26 percent. Most of this change in volume is explained by the
4 factors discussed above. Table 16 shows that other factors were responsible for a 3.77
5 percent reduction in Bound Printed Matter volume over the past five years

6 One of the major components of Bound Printed Matter is catalogs weighing
7 between one and ten pounds. The Postal Service is the dominant deliver of catalogs.
8 Saccomano ["Expanding Mail-Order Delivery Business Creates Opportunity for
9 Carriers, Post Office," *Traffic World*, August 1995, pp.43-44] reports that 95 percent of
10 the catalog distribution business is handled through the Postal Service in various mail
11 classes. However, she also notes that catalog companies are also using zoneskipping
12 to reduce distribution costs. Truckers and small parcel couriers consolidate catalogs
13 into full truckloads and then transport them to the bulk mail center closest to the point of
14 final delivery. The Postal Service then does the final distribution. ["The Giant Shippers,"
15 *Traffic Management*, October 1995].

16 The growth in catalog sales mentioned earlier clearly is indicative of growth in
17 the volume of catalog deliveries in the US. In addition, two other indicators are
18 relevant. Total employment has steadily increased and is predicted to continue to
19 increase in the future. Despite the predicted growth in the Internet and other high tech
20 sales media, catalog employment is still expected to increase.

21 Another indicator of the volume of Bound Printed Matter is the number of pages
22 in the primary catalog. Large catalogs are those in excess of 64 pages. The general
23 trend seems to be away from large catalogs. From 1988 to 1997, large catalogs have
24 fallen from 36.6 percent of the total to 16.5 percent. Small catalogs have gone from

32.5 percent of the total in 1988 to 54.2 percent in 1997. This reflects a trend in the catalog market to smaller, more specialized catalogs targeted to a particular group of consumers. [Direct Marketing Association, *Statistical Fact Book*, 1985, 1988, 1991-92, 1992-93, 1994-95, 1996, 1997, 1998, 1999].

4. Volume Forecast

Table 16A presents the volume forecasts of Bound Printed Matter. The Base Year volume is 488.627 million pieces. Non-rate factors are projected to increase volume by 10.87 percent between the Base Year and the Test Year. In the before-rates forecast, the decline in the real price of Bound Printed Matter adds 0.04 percent to volume, yielding a Test Year before-rates forecast of 541.976 million pieces. In the after-rates forecast, the proposed increase in Bound Printed Matter price reduces volume by 3.14 percent, yielding a Test Year after-rates forecast of 524.743 million pieces.

Table 16A
Volume Forecast of Bound Printed Matter

	Before-Rates	After-Rates
Base Year Volume (Millions)	488.627	488.627
Non-Rate Impact	10.87%	10.87%
Postal Rate Impact	0.04%	-3.14%
Test Year Volume (Millions)	541.976	524.743

D. Standard B Special Rate Mail

1. Definition

Standard B Special Rate mail includes books, literary manuscripts, compact discs and cassette tapes, small films, and educational materials such as charts and

1 mathematical tables. Book clubs, music clubs, and book publishers account for 95
2 percent of the Special Rate mail volume.

3 Special rate mail is not zoned, but postage varies by weight. Two presort rates
4 are available.

5 **2. Volume Changes**

6 As shown in Figure 17, the volume of special-rate mail declined between the
7 mid-1970s and the early 1990s, but has recovered slightly in the mid-1990s. Volume
8 fell from more than two pieces per adult in the early 1970s to less than one piece per
9 adult in 1990. In 1999, volume per adult was just over one piece.

10 **3. Factors Affecting Volume**

11 **a. Prices**

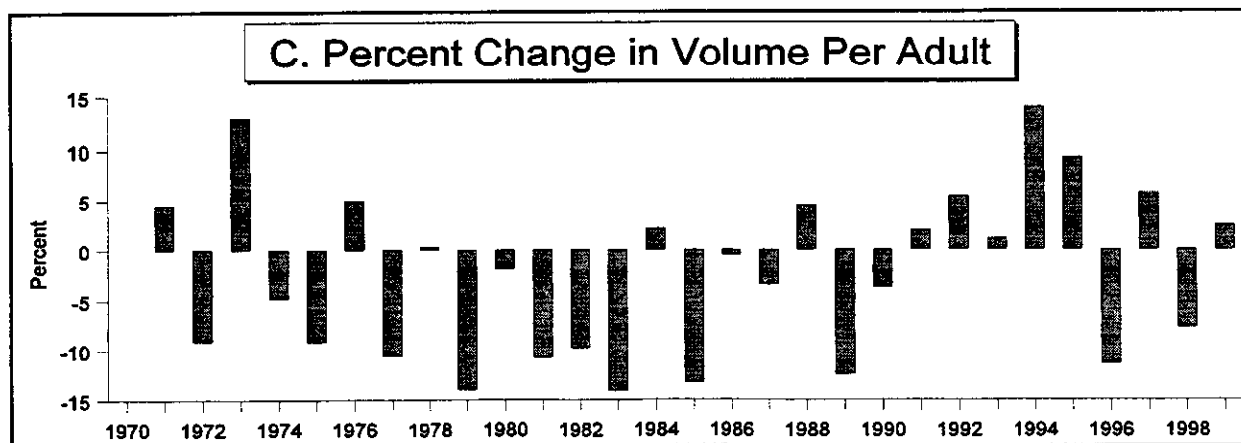
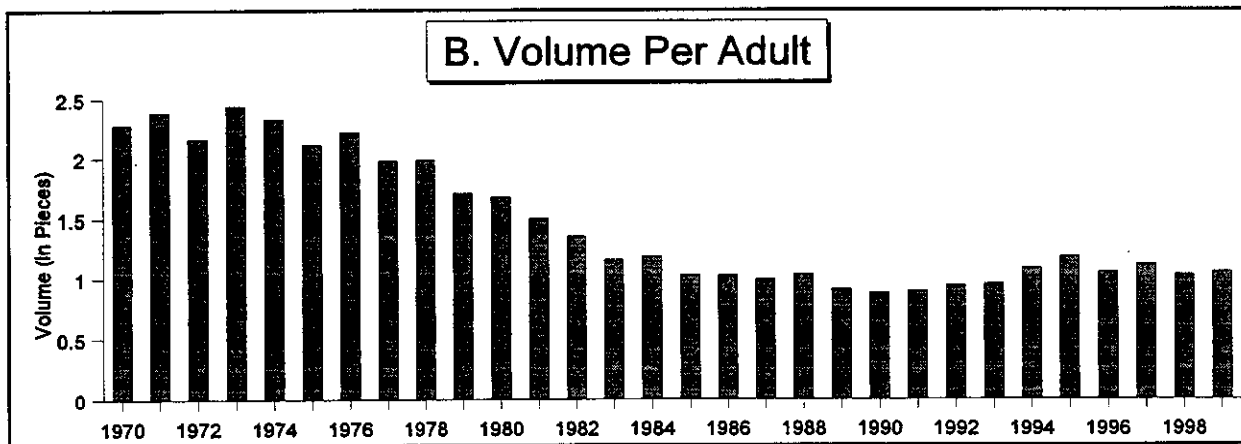
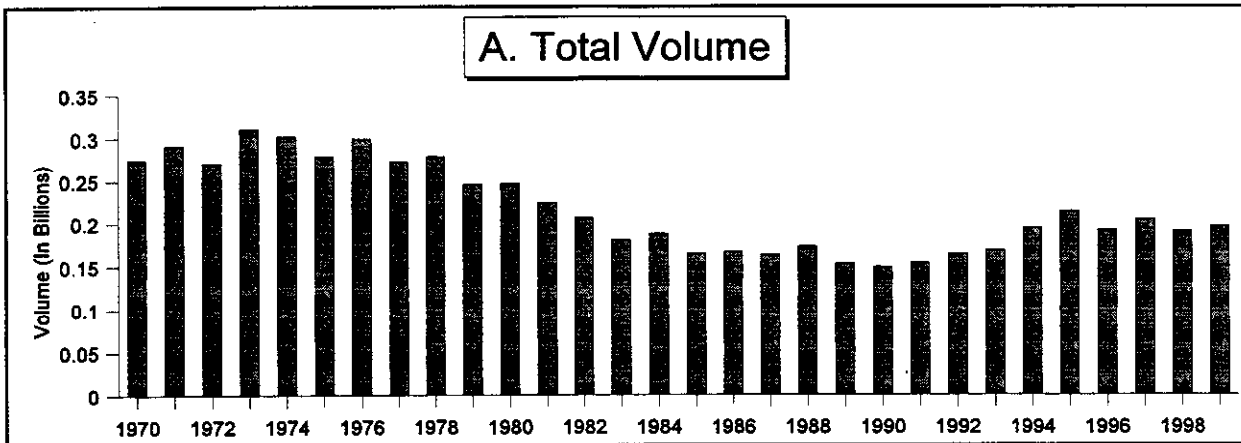
12 The real price of Special Rate mail increased by 1.7 percent between 1994 and
13 1999. With an estimated long-run own-price elasticity of -0.296, the price change
14 increase is estimated to have caused Special Rate mail volume to decline 0.45 percent
15 over the period.

16 **b. Income**

17 The elasticity of Special Rate mail volume with respect to permanent income per
18 adult is estimated to be 0.232. Consequently, the 7.1 percent increase in permanent
19 income per adult over the past five years contributed 1.59 percent to Special Rate
20 volume.

21 Transitory income, reflecting changes in the business cycle and measured by an
22 index of capacity utilization, decreased 2.3 percent over the past five years. It is
23 estimated that a one percent increase in transitory income leads to a 0.808 percent

Figure 17
Standard Special Rate



1 increase in Special Rate mail volume. Applying this estimated elasticity to the decrease
2 in transitory income results in a 1.86 percent decrease in volume, as shown in Table 17.

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

CONTRIBUTIONS TO CHANGE IN SPECIAL RATE VOLUME FROM 1994 to 1999			
<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	1.7%	-0.296	-0.45%
Income			
Permanent	7.1%	0.232	1.59%
Transitory	-2.3%	0.808	-1.86%
Adult Population	4.66%	1	4.66%
Other Factors			-0.83%
Total Change in Volume			3.17%

19 **c. Adult Population**

20 Growth in adult population contributed 4.65 percent to the volume of Standard B
21 Special Rate mail over the past five years.

22 **d. Other Factors**

23 Table 17 shows that in addition to the impacts of the variables listed above, other
24 factors were responsible for a 0.83 percent decline in the volume of Special Rate mail
25 over the past five years.

26

27

4. Volume Forecast

Table 17A presents the before- and after-rates Test Year volume forecasts for Standard B Special Rate mail. The before-rates forecast is 208.687 million pieces in the Test Year. The after-rates forecast, using rates proposed by the Postal Service, is 205.789 million pieces. The after-rates postal rate impact is positive because the proposed rates, after adjusting for inflation, are less than the Base Year rates.

Table 16A
Volume Forecast of Standard B Special Rate Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	200.243	200.243
Non-Rate Impact	2.08%	2.08%
Postal Rate Impact	2.09%	0.67%
Test Year Volume (Millions)	208.687	205.789

E. Standard B Library Rate

1. Definition

Schools, colleges, universities, public libraries, museums, herbariums, and nonprofit organizations are eligible to send Standard B mail at a preferred rate known as Standard B Library Rate. No permit is required as would be the case for other preferred rate categories such as Periodicals and Standard A Nonprofit mail. It is required only that the address or return address be that of an eligible institution and that the label "Library Rate" appear conspicuously on both sides of the package.

One of the most common uses of Library Rate is for publishers and distributors to send books to schools, colleges, universities, and public libraries. This use accounts for 23 percent of Library Rate mail pieces according to the *Preferred Rate Study*.

1 Another common use is for inter-library loan materials. Overall, libraries send 21
2 percent of the total Library Rate volume. Thirty-two percent of the Library Rate volume
3 is mailed by educational organizations.

4 As in the case of Special Rate, rates are based on weight but not distance.
5 Phased increases mandated for preferred subclasses have raised rates for Library Rate
6 mail.

7 **2. Volume History**

8 The top panel of Figure 18 shows annual total volume for Standard B Library
9 Rate. Total volume increased from 26.9 million pieces in 1970 to 72.0 million pieces in
10 1978. Since then, volume has generally declined and by 1999 had fallen to 28 million
11 pieces, about equal to its 1970 level. Volume per adult, however, in 1999 (0.15 pieces)
12 is much lower than in 1970 (0.22 pieces) owing to increases in population.

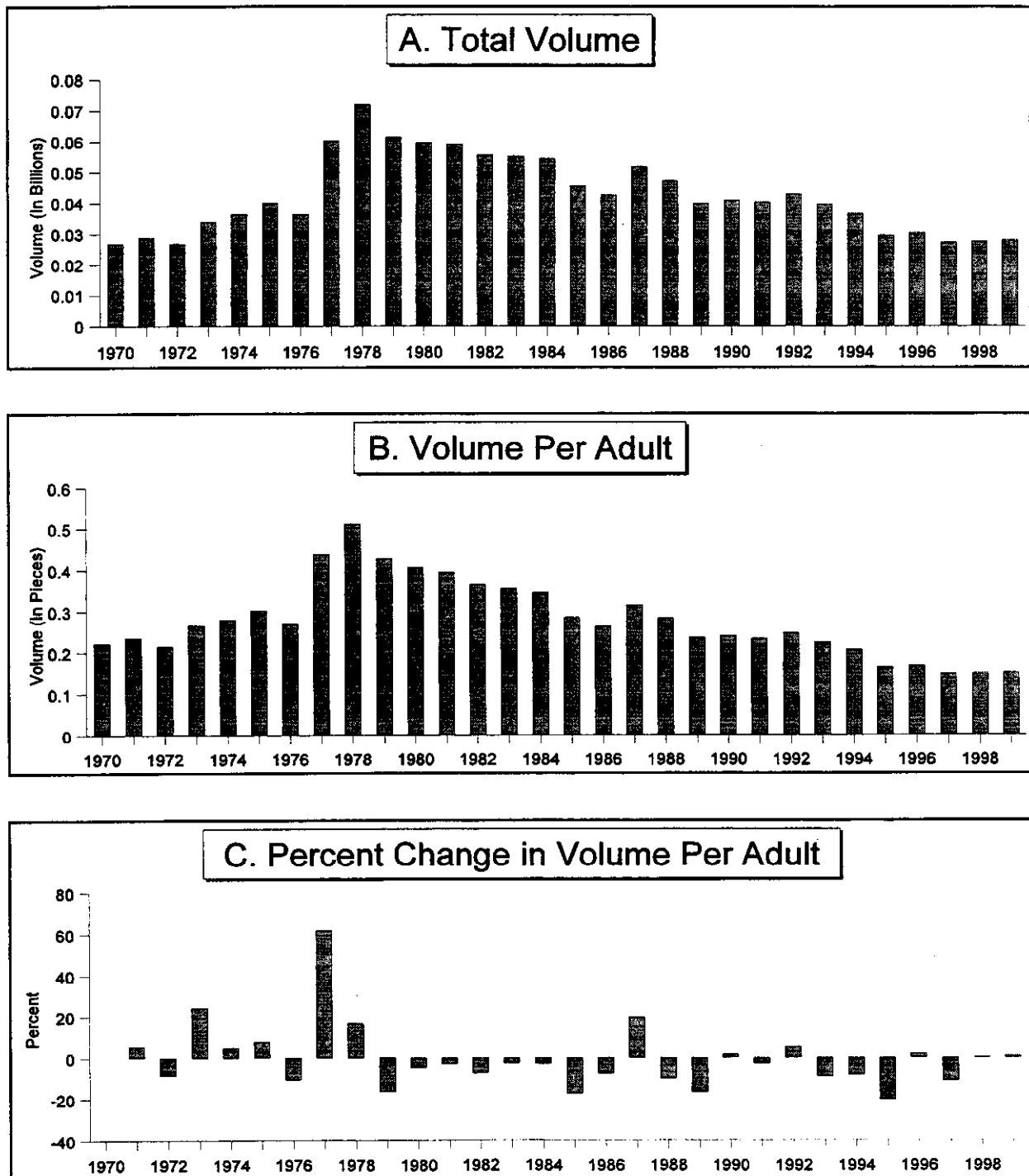
13 The bottom panel of Figure 18 shows that declines in volume per adult are more
14 common than increases. The large percentage increase in 1977 was associated with a
15 rule change that allowed publishers sending materials to schools and libraries to send
16 them Library Rate. In 1994, that rule was essentially repealed and access to library
17 rates was limited, explaining part of the large volume decline in 1995.

18 **3. Factors Affecting Volume**

19 **a. Price**

20 Table 18 shows that the volume of Library Rate mail declined 23.67 percent over
21 the past five years. This decline is largely explained by the 59.9 percent increase in
22 real price over this time period. Applying the estimated own-price elasticity of -0.654 to
23 this percentage price increase yields a decline in volume of 26.43 percent due to price.

Figure 18
Standard Library Rate



b. Income

Growth of permanent income per adult of 7.0 percent over the past five years contributed 0.79 percent to the volume of Library Rate mail, based on the estimated income elasticity of 0.115.

c. Adult Population

Table 18 shows that adult population growth added 4.64 percent to the volume of Library Rate mail over the past five years.

d. Other Factors

In addition to the effect of own-price, permanent income, and adult population, other factors were responsible for a 2.67 percent decline in Library Rate mail volume from 1994 to 1999, as shown in Table 18. Library rate mail volume has declined by more than twenty percent over the past five years. Much of this decline can be attributed to increased use of the Internet as a source of reference and other materials for libraries.

Table 18
CONTRIBUTIONS TO CHANGE IN
LIBRARY RATE VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own Price	59.9%	-0.654	-26.43%
Permanent Income	7.0%	0.115	0.79%
Adult Population	4.66%	1	4.66%
Other Factors			-2.67%
Total Change in Volume			-23.67%

4. Volume Forecast

The Base Year volume of Library rate mail is 28.010 million pieces. Projecting the impact of changes in non-rate variables and the change in the real price of Library rate mail between the Base Year and the Test Year yields a before-rates forecast of 29.009 million pieces. Table 18A also shows the after-rates forecast, which uses rates proposed by the Postal Service, adjusted for the change in the price level between the Base Year and the Test Year. The after-rates forecast for Library rate is 28.432 million pieces.

Table 18A
Volume Forecast of Standard B Library Rate Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	28.010	28.010
Non-Rate Impact	2.62%	2.62%
Postal Rate Impact	0.93%	-1.08%
Test Year Volume (Millions)	29.009	28.432

VII. POSTAL PENALTY AND FREE-FOR-THE-BLIND MAIL

A. Postal Penalty

1. Definition

Penalty mail consists of official mail sent by U.S. Government agencies relating solely to the business of the U.S. Government. Penalty mail is allowed to be sent without prepayment of postage. USPS is subsequently reimbursed for penalty mail by the agencies.

2. Volume History

As shown in Figure 19, postal penalty mail volume declined from 1991 to 1996 and since then has remained fairly constant. Volume per adult in 1999 was 2.0 pieces, as compared with 3.6 pieces per adult in 1991.

3. Factors Affecting Volume

a. Adult Population

As shown in Table 19, adult population contributed 4.65 percent to volume over the past five years.

b. Other Factors

Table 19 shows that beyond the impact of adult population, other factors contributed to a 21.88 percent decline in the volume of postal penalty mail. The decline in postal penalty mail is consistent with efforts by the Postal Service to discourage use of this product. Most of the decline is explained by an econometrically estimated time trend.

Figure 19
Postal Penalty

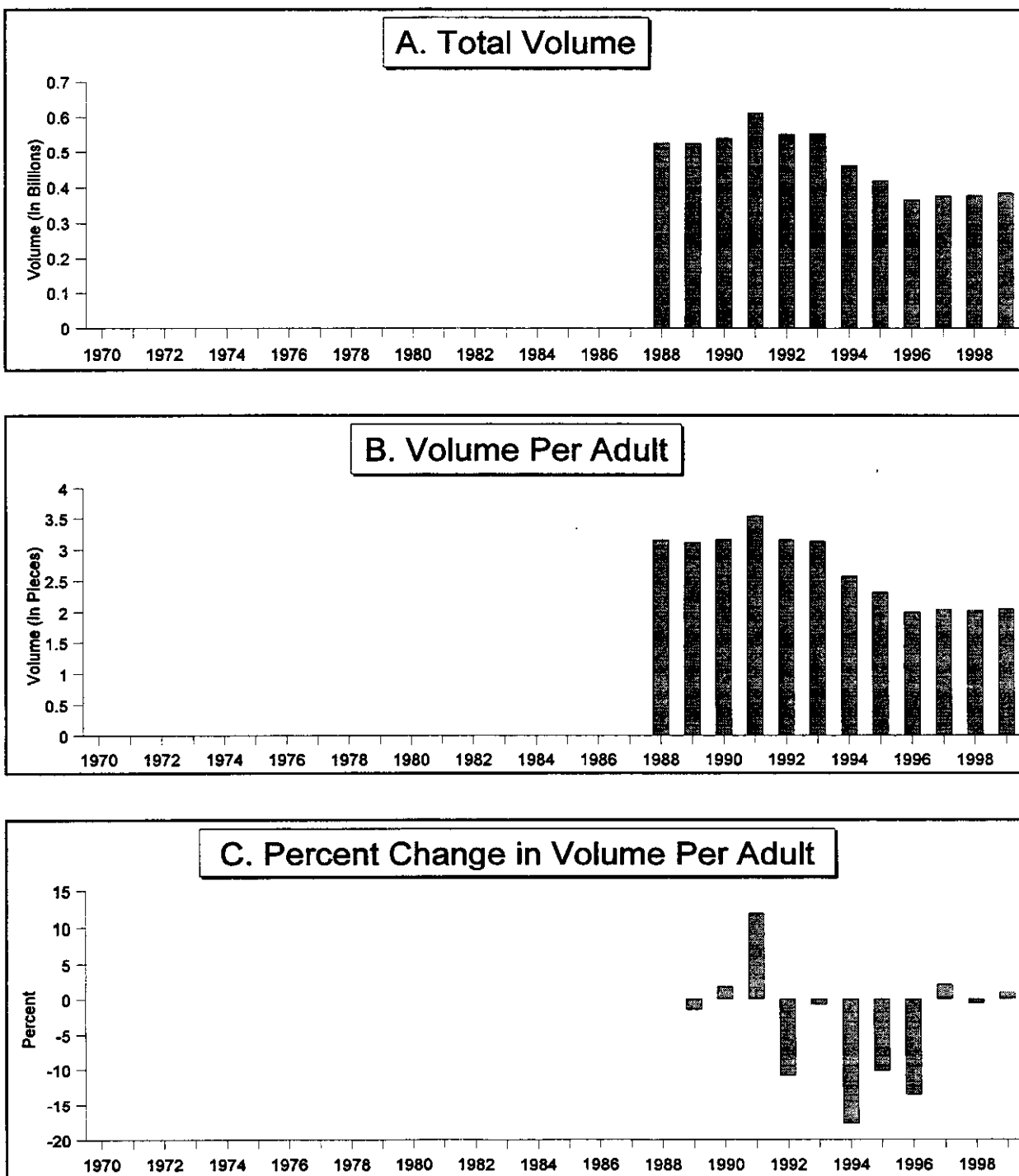


Table 19
CONTRIBUTIONS TO CHANGE IN
POSTAL PENALTY VOLUME FROM 1994 to 1999

<u>Variable</u>		<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Adult Population	4.65%	1	4.65%
Other Factors			-21.88%
Total Change in Volume			-17.23%

4. Volume Forecast

Since there is no rate to which volume can respond, the before-rates forecast and the after-rates forecast for postal penalty mail are identical. Projecting the influence of population and an econometrically estimated trend from the Base Year to the Test Year gives a forecast for postal penalty mail for both before- and after-rates in the Test Year of 348.543 million pieces.

Table 19A
Volume Forecast of Postal Penalty Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	381.981	381.981
Non-Rate Impact	-8.75%	-8.75%
Postal Rate Impact	nil	nil
Test Year Volume (Millions)	348.543	348.543

B. Free-for-the-Blind**1. Definition**

Free-for-the-blind mail includes materials and devices for those unable to read conventionally. No postage is charged for authorized mailings of these items. Customers who are eligible to mail this category must be on record at their local post office.

2. Volume History

As shown in Figure 20, volume of free-for-the-blind mail is somewhat erratic, but has generally grown over time. Volume in 1981 appears to be abnormally high, but overall volume in the 1990s is higher than in earlier years. On a per adult basis, volume increased from 0.16 pieces in 1989 to 0.30 pieces in 1993. Since then, volume per adult has remained fairly constant. In 1999, the volume of 0.28 pieces per adult was more than twice the level of the 1970s.

3. Factors Affecting Volume**a. Adult Population**

Adult population added 4.66 percent to the volume of free-for-the-blind mail over the past five years.

b. Other Factors

Other factors were responsible for a 1.89 percent decline in free-for-the-blind mail.

Figure 20
Free-for-the-Blind

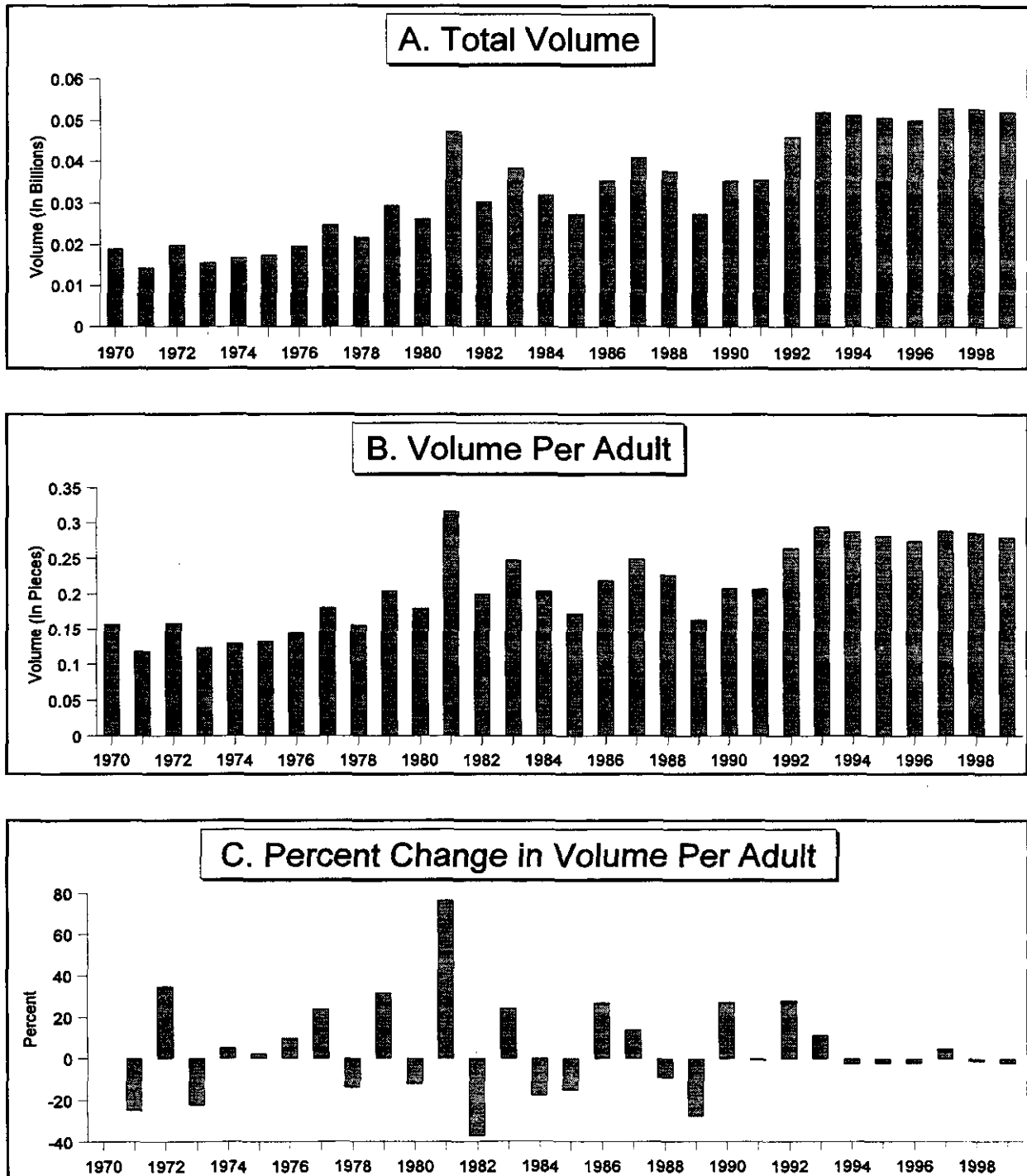


Table 20
CONTRIBUTIONS TO CHANGE IN
FREE-FOR-THE-BLIND VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Adult Population	4.66%	1	4.66%
Other Factors			-1.89%
Total Change in Volume			2.77%

4. Volume Forecast

Since there is no rate to which volume can respond, the before-rates forecast and the after-rates forecast for free-for-the-blind mail are identical. Projecting the influence of population and an econometrically estimated trend from the Base Year to the Test Year gives a forecast for free-for-the-blind mail for both before- and after-rates in the Test Year of 56.675 million pieces.

Table 20A
Volume Forecast of Free-for-the-Blind Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	52.718	52.718
Non-Rate Impact	7.51 %	7.51%
Postal Rate Impact	nil	nil
Test Year Volume (Millions)	56.675	56.675

1 **III. SPECIAL SERVICES**

2 **A. General Characteristics**

3 Six special services are included in this section. They are registry service,
4 insured mail, certified mail, collect-on-delivery service, return receipts, and postal
5 money orders. Registry service, insurance, certified mail service, and return receipts
6 are used to provide added security, to protect the value of the mail, and to verify that
7 the mail piece was sent through the Postal Service. Collect-on-delivery service is used
8 as a method of payment for mail pieces delivered by the Postal Service. Money orders
9 are considered a non-mail service, as money orders can be purchased from any post
10 office for a fee to be used for payment of sums of money or travelers' checks or as a
11 bank check and need not be used in conjunction with the mail.

12 In Postal Year 1999, there were 13.8 million registered mail pieces, 48.1 million
13 insured mail pieces, 267.1 million pieces of certified mail, 4.0 million collect-on-delivery
14 pieces, 228.6 million return receipts and 219.1 million money orders. The total volume
15 of special services was 780.7 million transaction in 1999, or about 4.2 transactions per
16 adult.

17 **B. Registry**

18 **1. Definition**

19 Registry is a special service for First-Class mailers, providing added protection
20 for valuable mail and payment for damaged or lost mail. According to the Domestic Mail
21 Manual, "it is the most secure service that the USPS offers" (Domestic Mail Manual,
22 S911.1.1, p. S-17). Registry involves a series of receipts as the piece travels from
23 sender to recipient. Registered mail must be prepaid at First-Class Mail rates, and
24 cannot include business reply mail.

25

2. Volume History

Figure 21 shows that the volume of registry transactions has declined from 48.0 million pieces in 1970 to 13.8 million pieces in 1999. Volume per adult has shown an even greater decline, falling more than eighty percent. Volume per adult has declined in each of the last eleven years.

3. Factors Affecting Volume

a. Price

The real price of Registry mail increased 16.3 percent over the past five years. It is estimated that the own-price elasticity of Registry mail is -0.246. Applying this elasticity to the 16.3 percent increase in real price produces a decrease in volume of 3.54 percent, as shown in Table 21.

b. Income

Both permanent and transitory income positively affect the volume of Registry mail, though the estimated impacts of the two variables differ. A one percent increase in permanent income per adult is estimated to lead to a 0.505 percent increase in Registry volume. The estimated elasticity of volume with respect to transitory income is 0.373 percent. Therefore, the 7.1 percent increase in permanent income per adult contributed 3.51 percent to the volume of Registry mail while the 2.3 percent decrease in transitory income reduced volume by 0.87 percent.

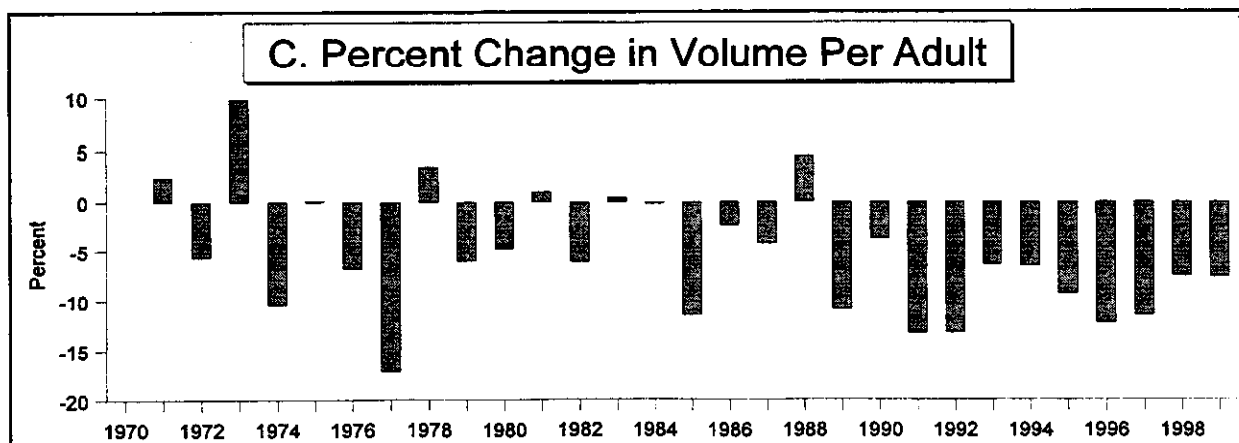
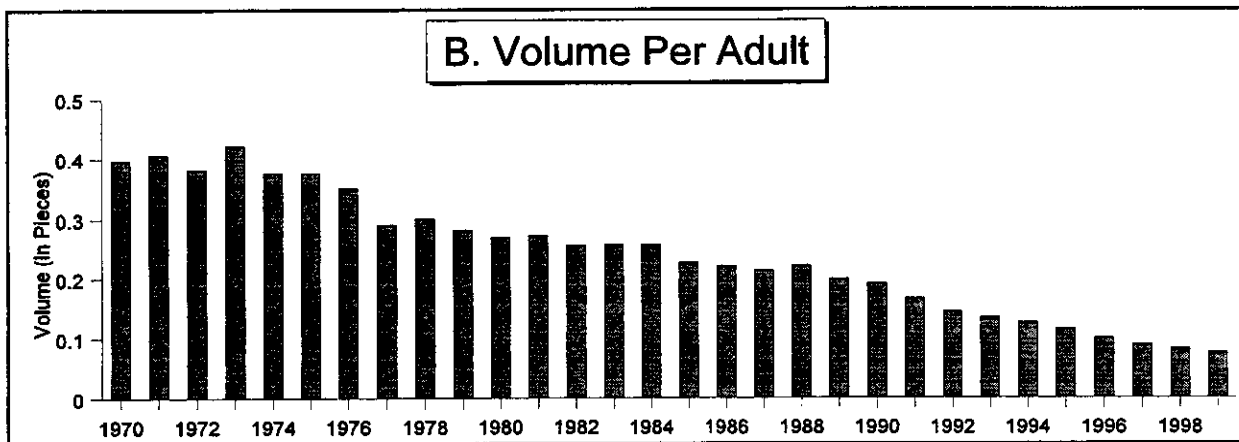
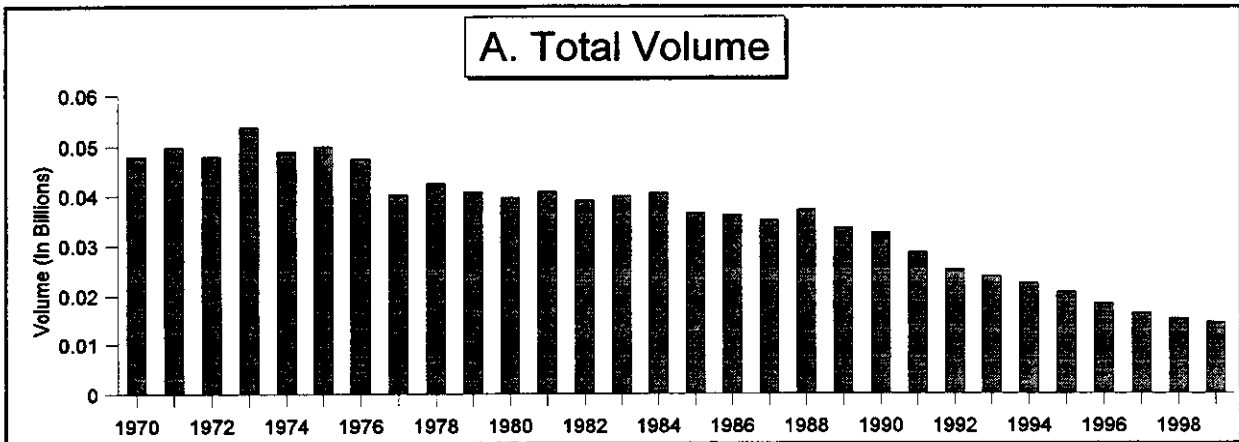
c. Adult Population

Adult population growth added 4.65 percent to the volume of Registry mail over the past five years.

d. Other Factors

Table 21 shows that registry volume fell 38.96 percent over the past five years. In conjunction with its security features, registry mail combines the services of certified

Figure 21
Registry



and insured mail by offering both a record of the mailing and insurance coverage of up to \$25,000. In general, there has been a long-term decline in the use of mail insurance. This negative trend may be due, in large part, to the increased provision of insurance by credit card companies. Merchandise is frequently insured at the time of purchase, making registered mail unnecessary. Another factor contributing to the decline in registered mail is that many private delivery companies, especially overnight delivery firms, include insurance in the price of delivery. Mailers who wish to insure time-sensitive items can use a private delivery company.

Table 21
CONTRIBUTIONS TO CHANGE IN
REGISTRY MAIL VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	16.3%	-0.246	-3.54%
Income			
Permanent	7.1%	0.505	3.51%
Transitory	-2.3%	0.373	-0.87%
Adult Population	4.66%	1	4.66%
Other Factors			-42.71%
Total Change in Volume			-38.96%

4. Volume Forecast

Multiplying the Base Year volume of Registry mail by the non-rate and postal rate impacts yields a before-rates Test Year forecast of 11.563 million as shown in Table

21A. The after-rates projection, which includes the impact of the proposed increase in Registry mail rate, is 10.966 million.

Table 21A
Volume Forecast of Registry Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	13.768	13.768
Non-Rate Impact	-15.41%	-15.41%
Postal Rate Impact	-0.71%	-5.85%
Test Year Volume (Millions)	11.563	10.966

C. Insured

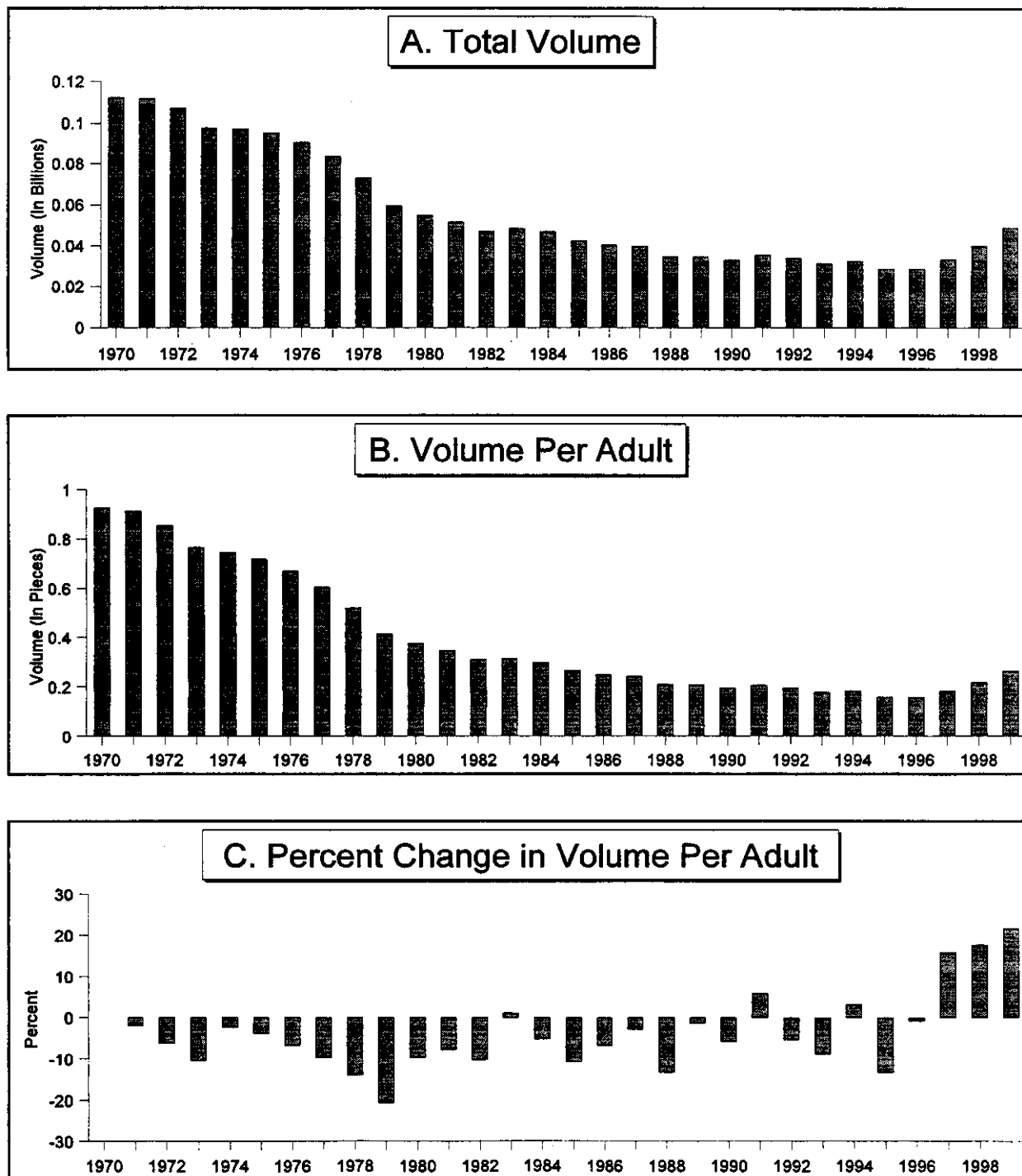
1. Definition

Insurance provides reimbursement for loss or damages. Insurance may not be purchased for unusually fragile or ill-prepared articles. Even though no record of insured mail is kept at the post office of mailing, the sender is provided a mailing receipt. For mail insured for more than \$50, a delivery record is kept at the addressee post office. Insured mail is handled in transit as ordinary mail. As a result of the MC96-3 case, the maximum level of insurance was increased from \$600 to \$5,000.

2. Volume History

Figure 22 shows that the volume of insured transactions fell from 112.4 million in 1970 to 28.8 million in 1995. Volume has recovered since then, rising to 48.1 million transactions in 1999. Much of this increase is due to the increase in the maximum level of insurance following the MC96-3 case. Volume per adult increased more than 15 percent in each of the last three years, reaching 0.26 pieces in 1999. Still, this represented more than a 70 percent decline since 1970.

Figure 22
Insurance



3. Factors Affecting Volume

a. Price

Table 22 shows that the real own-price of mail insurance declined 3.2 percent in the past five years. Applying an estimated price elasticity of -0.179 to this price decline yields an increase in volume of 0.58 percent due to this factor.

b. Income

A one percent increase in permanent income per adult is estimated to increase insurance volume by 0.505 percent. Therefore, the 7.0 percent increase in permanent income per adult over the past five years contributed 3.50 percent to the volume of mail insurance.

c. Parcel Post Volume

Insurance is often purchased on Parcel Post mailings. Therefore, changes in the volume of Parcel Post can be expected to effect the volume of insurance. It is estimated that the 22.3 percent increase in Parcel Post volume contributed 4.99 percent to the volume of insured mail, as shown in Table 22.

d. Adult Population

Adult population growth added 4.65 percent to the volume of insured mail over the past five years.

e. MC96-3

The MC96-3 special services classification reform increased the maximum amount of insurance coverage from \$600 to \$5,000. It is estimated that this increase in coverage contributed 69.83 percent to the volume of insured transactions, as shown in Table 22.

f. Other Factors

Table 22 shows that the volume of insured transactions increased 46.10 percent over the past five years, much less than the sum of the contributions considered so far. Other factors were responsible for a 37.45 percent of decline in volume. The increase in coverage resulting from the MC96-3 classification reform reversed the long-term decline in the volume of insured transactions. Nonetheless, many of the factors which have contributed to this long-term decline have continued in recent years. Many transactions are insured automatically when purchased with a credit card and companies often insure materials at the time of purchase, making postal insurance unnecessary.

Table 22
CONTRIBUTIONS TO CHANGE IN
INSURED MAIL VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	-3.2%	-0.179	0.58%
Permanent Income	7.0%	0.505	3.50%
Parcel post volume	22.3%	0.258	4.99%
Adult Population	4.66%	1	4.66%
MC96-3			69.83%
Other Factors			-37.45%
Total Change in Volume			46.10%

4. Volume Forecast

The recent increase in insurance volume is reflected in the Base Year volume of 48.054 million, as shown in Table 22A. Non-rate factors (including the change in the volume of parcel post) are projected to reduce insurance volume by 4.19 percent between the Base Year and the Test Year. The postal rate impact reduces volume by an additional 0.93 percent, yielding a Test Year before-rates forecast of 45.610 million.

Table 22A shows that the non-rate impact is different in the after-rates scenario, because it includes the impact of the decrease in Parcel Post volume resulting from the proposed increase in Parcel Post price. Thus, after-rates, non-rate factors reduce insurance volume by 4.48 percent between the Base Year and the Test Year. The proposed increase in insurance rates reduces volume by 2.67 percent. Combining these impacts results in a Test Year after-rates volume forecast of 44.680 million.

Table 22A
Volume Forecast of Insurance

	Before-Rates	After-Rates
Base Year Volume (Millions)	48.054	48.054
Non-Rate Impact	-4.19%	-4.48%
Postal Rate Impact	-0.93%	-2.67%
Test Year Volume (Millions)	45.610	44.680

D. Certified

1. Definition

Certified mail is a less expensive substitute for "no value" registered First-Class Mail. No insurance coverage is offered with this service, and certification is available only for First-Class Mail. Certified mail provides the mailer with a mailing receipt and a record of delivery is maintained at the delivery office. The service may also be used in

1 conjunction with restricted delivery and return receipt services to provide both enhanced
2 control of delivery and proof of delivery.

3 2. **Volume History**

4 In contrast to registered and insured mail, certified mail volume has increased,
5 rising from 56.0 million transactions in 1970 to 267.1 million transactions in 1999.
6 Volume per adult has more than tripled during this time period. The bottom panel of
7 Figure 23 shows that volume per adult increased in every year from 1980 to 1997, with
8 the exception of a small decline in 1997. Volume has declined the last two years, going
9 from its 1997 peak of 1.6 pieces per adult to its 1999 volume of 1.4 pieces per adult.

10 3. **Factors Affecting Volume**

11 a. **Price**

12 Table 23 shows that the real price of certified mail increase 23.8 percent over the
13 past five years and this price increase is responsible for a 5.99 percent decline in
14 volume, obtained after applying the estimated own-price elasticity of -0.289.

15 b. **Income**

16 Permanent income per adult increased 7.1 percent over the past five years
17 leading to a 3.50 percent increase in the volume of certified mail, after applying the
18 estimated elasticity of 0.504. The 2.3 percent decline in transitory income over the past
19 five years reduced certified mail volume by 0.47 percent, based on applying the
20 estimated elasticity of 0.205.

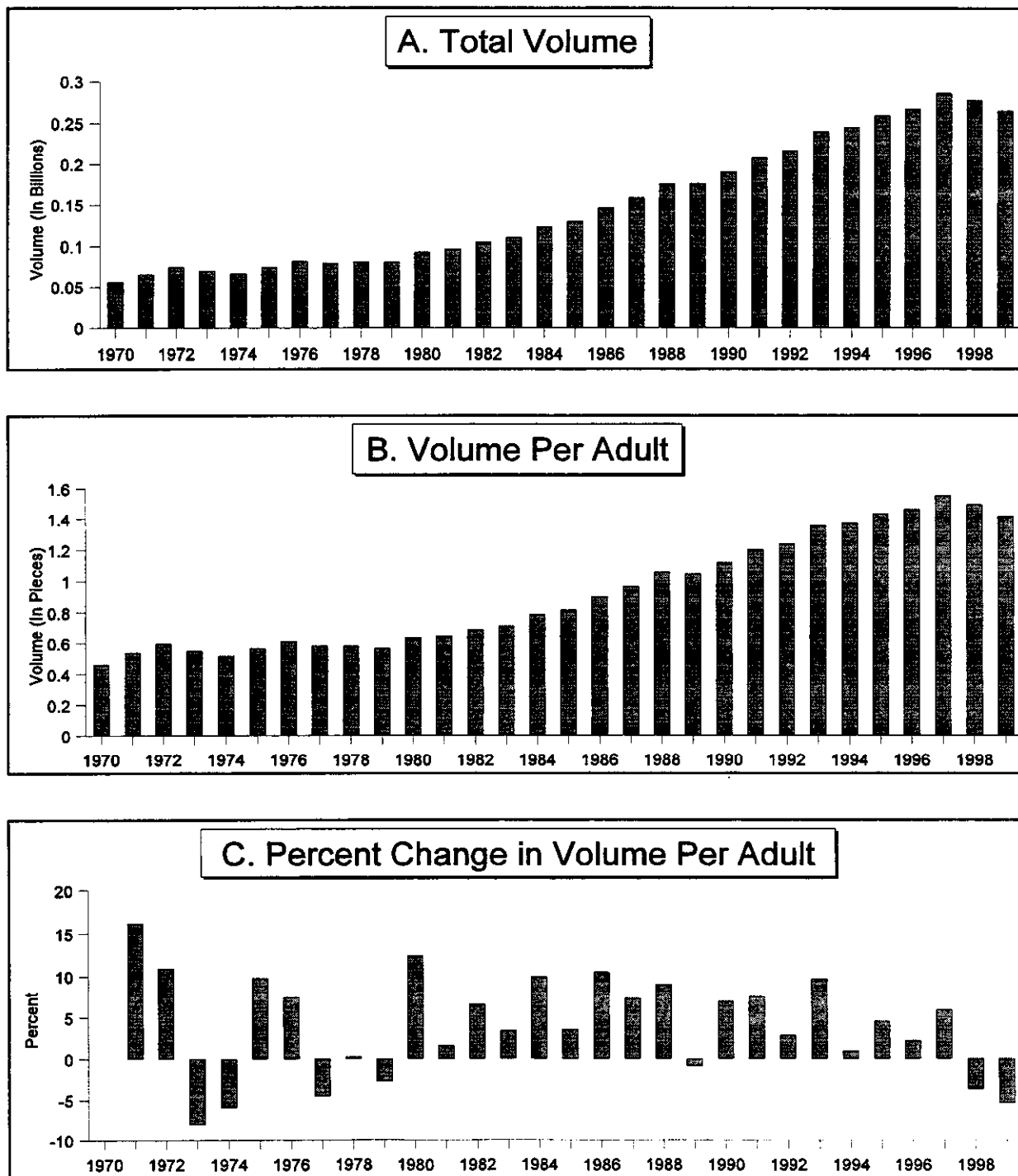
21 c. **Adult Population**

22 Growth in adult population was responsible for a 4.65 percent increase in the
23 volume of certified mail.

24

25

Figure 23
Certified Mail



d. Other Factors

Table 23 shows that in addition to the impacts of the above variables, other factors were responsible for a 7.26 percent increase in the volume of certified mail. Certified volume is enhanced by increases in the number of financial and legal transactions. The certified mail volume declines in the last two years run counter to the long term pattern of consistent increases. It is possible that some of the recent decline is related to the increase in the volume of insurance coverage discussed in the previous section. Certified mail is less expensive than insured mail, and when the maximum value of the insurance was rather low, mailers may have felt that the additional charge for postal insurance was not a particularly valuable option. With higher insurance coverage now provided, it is possible that some mailers have now shifted from certified mail to insured mail.

Table 23
CONTRIBUTIONS TO CHANGE IN
CERTIFIED MAIL VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	23.8%	-0.289	-5.99%
Permanent Income	7.1%	0.504	3.50%
Transitory Income	-2.3%	0.205	-0.47%
Adult Population	4.66%	1	4.66%
Other Factors			7.26%
Total Change in Volume			8.95%

4. Volume Forecast

Table 23A presents the before- and after-rates forecasts for certified mail. In the before-rates case, non-rate factors add 10.43 percent to volume while the decline in the real price of certified mail adds 0.28 percent to volume, yielding a Test Year forecast of 295.742 million pieces. Table 23A also shows that the proposed rate increase for certified mail is projected to reduce volume by 6.78 percent between the Base Year and the Test Year, resulting in an after-rates forecast of 274.934 million.

Table 23A
Volume Forecast of Certified Mail

	Before-Rates	After-Rates
Base Year Volume (Millions)	267.068	267.068
Non-Rate Impact	10.43%	10.43%
Postal Rate Impact	0.28%	-6.78%
Test Year Volume (Millions)	295.742	274.934

E. Collect-on-Delivery

1. Definition

Collect-on-delivery (COD) is used primarily by businesses mailing to individuals. The remainder of any payment due for an article and the cost of postage is paid at the time of delivery, and the amount collected is returned to the mailer by a postal money order or personal check. This service provides the mailer with a mailing receipt, and the destination post office keeps a delivery record. The current maximum COD payment is \$600. This service may be used with Express Mail, First-Class Mail, Priority Mail and Standard B mail.

2. Volume History

As Figure 24 shows, COD volume has experienced a long-term decline, falling from 19.8 million transactions in 1970 to 4 million transactions in 1999. On a per adult basis, volume in 1999 was only 0.022 pieces, representing a decline of more than 80 percent from its level in 1970. COD volume per adult declined in every year from 1990 to 1998. However, volume increased in 1999, the first increase since 1989 and only the second increase since 1983.

3. Factors Affecting Volume

a. Price

The real price of COD increased 28.7 percent over the past five years. It is estimated that the long-run own-price elasticity of COD volume is -0.192. Applying this elasticity to the price increase yields a 4.73 percent decline in volume due to this factor.

b. Income

Permanent income per adult increased 7.1 percent from 1994 to 1999. Table 24 shows that the estimated elasticity of COD volume with respect to permanent income is 0.505. Therefore, the growth in permanent income per adult contributed 3.50 percent to COD volume over the past five years.

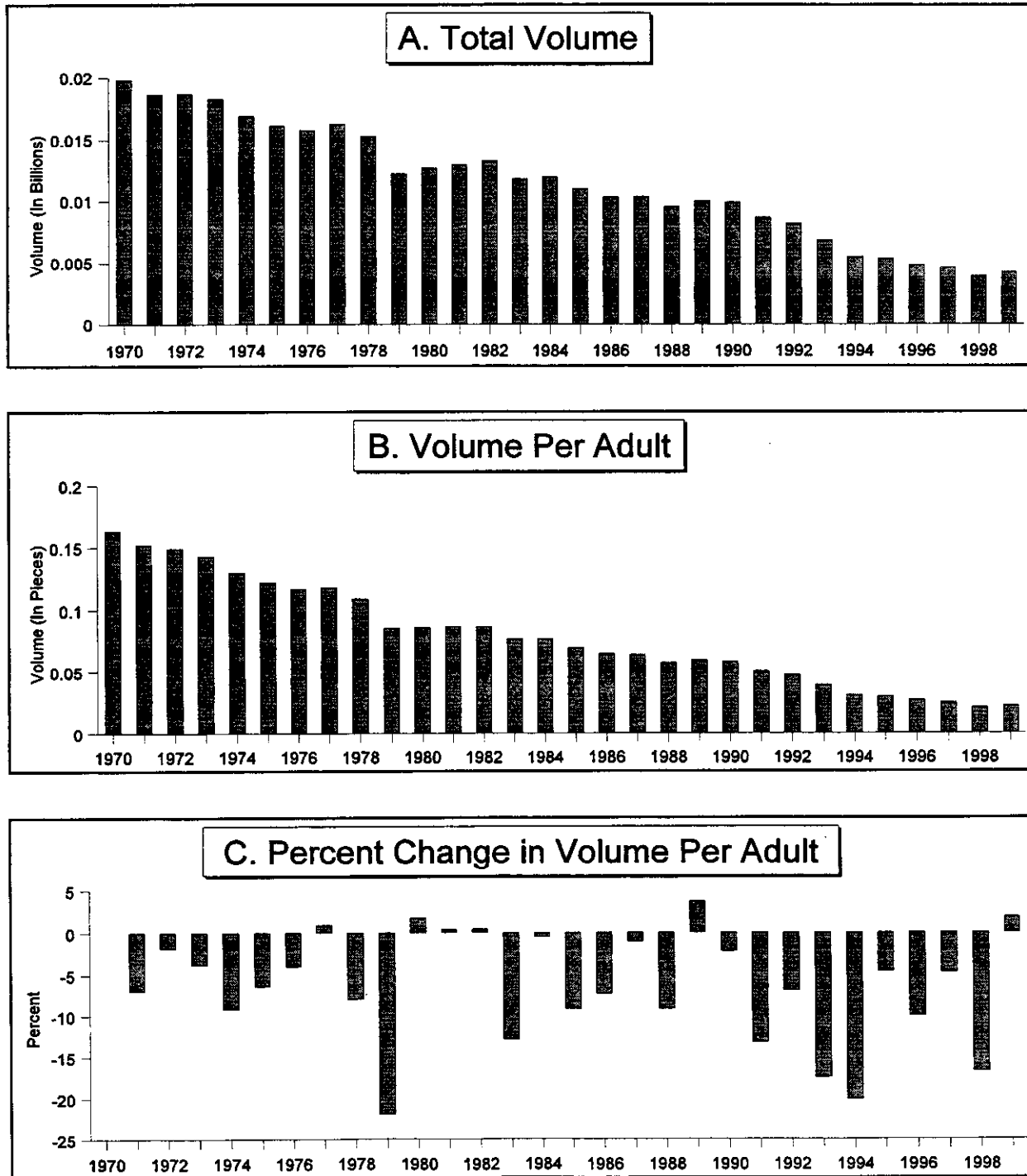
c. Adult Population

Increases in adult population added 4.65 percent to the volume of COD transactions over the past five years.

d. Other Factors

Table 24 shows that other factors were responsible for a 30.76 percent decrease in volume. The volume of COD transactions has continued its long-term decline. The negative trend of Collect-on-Delivery (COD) mail volume may be due to the increased use of credit cards to pay for mail-order merchandise. Credit card payments are more

Figure 24
COD



convenient for mail order merchants since the payment is secured through the credit card company, not the Postal Service. At the same time, many mail-order purchases are paid for through direct billing of a buyer's telephone number, or through the Internet, further reducing the demand for collect-on-delivery services.

Table 24
CONTRIBUTIONS TO CHANGE IN
COD VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	28.7%	-0.192	-4.73%
Permanent Income	7.1%	0.505	3.50%
Adult Population			4.65%
Other Factors			-30.76%
Total Change in Volume			-27.34%

4. Volume Forecast

As shown in Table 24A, the long-term decline in COD volume is projected to continue in the future, with non-rate factors reducing volume by 10.34 percent between the Base Year and the Test Year. Including the projected impact of changes in real postal rates over this time period yields a Test Year before-rates forecast of 3.576 million and an after-rates forecast of 3.544 million.

Table 24A
Volume Forecast of Collect-on-Delivery

	Before-Rates	After-Rates
Base Year Volume (Millions)	4.026	4.026
Non-Rate Impact	-10.34%	-10.34%
Postal Rate Impact	-0.92%	-1.81%
Test Year Volume (Millions)	3.576	3.544

F. Return Receipts

1. Definition

This service provides the mailer with the date of actual delivery and the addressee's actual mailing address. This service is available only for Express Mail and mail sent as certified, collect on delivery (COD), insured for more than \$50, or registered mail. Upon delivery, a return receipt is mailed to the sender.

2. Volume History

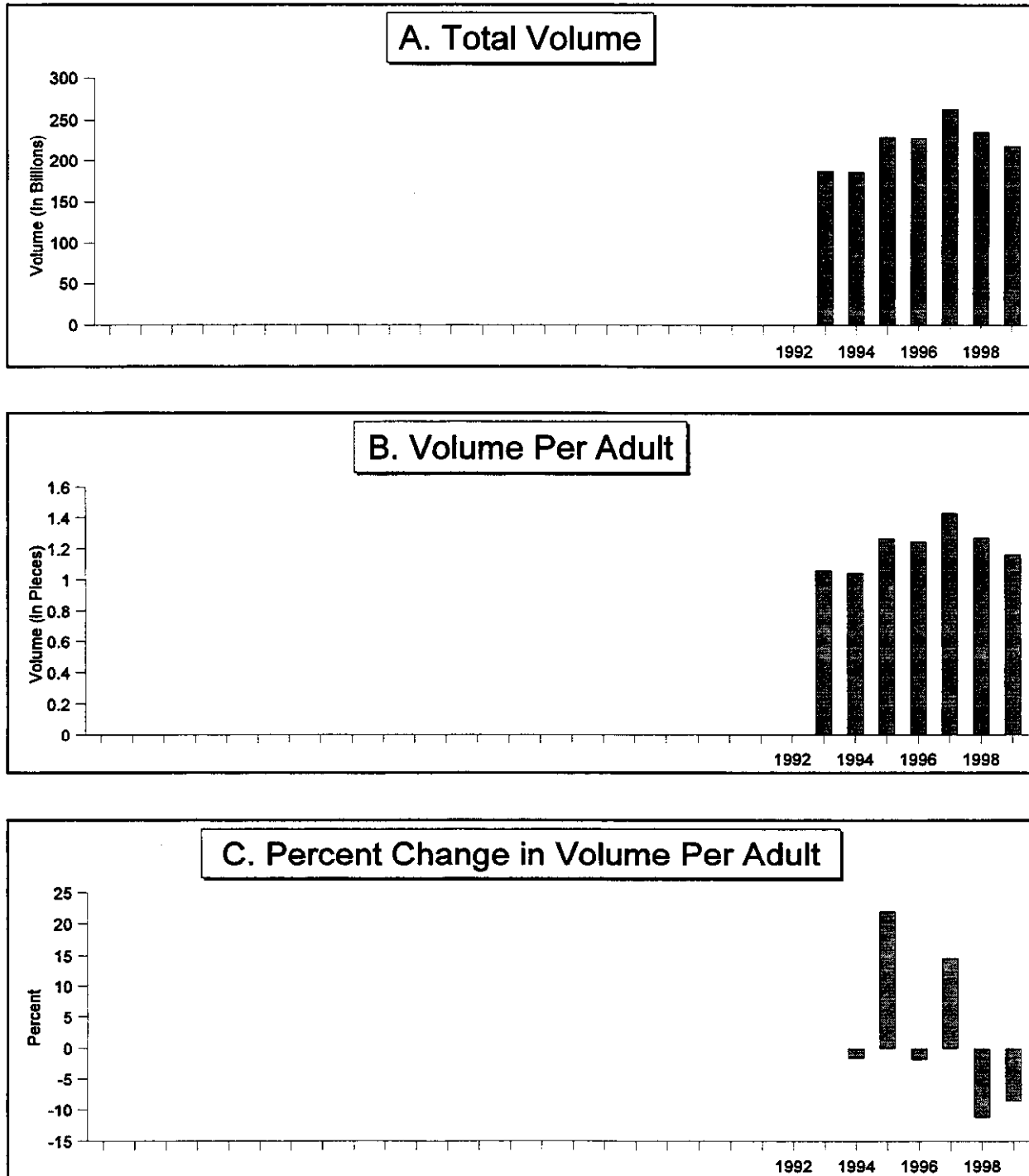
Figure 25 presents the volume of return receipts from 1993 to 1999. A pronounced increase in reported volume in 1995 is clearly shown. Volume also grew sharply in 1997, but has fallen considerably over the last two years. In 1999, return receipt volume per adult was about 1.2.

3. Factors Affecting Volume

a. Own-Price

From 1994 to 1999, the own-price of return receipts increased 9.2 percent, after adjusting for inflation. Applying an estimated own-price elasticity of -0.451 to this increase in price yields a 3.81 percent decline in volume as shown in Table 25.

Figure 25
Return Receipts



b. Income

The 67.1 percent increase in real permanent income per adult is estimated to have added 3.51 percent to the volume of return receipts over the past five years, based on an estimated income elasticity of 0.504.

c. Certified Mail Volume

Return receipts are often used in conjunction with certified mail. The estimated elasticity of the volume of return receipts with respect to the volume of certified mail is 0.756. Therefore, the 4.8 percent increase in certified volume per adult over the past five years is estimated to have contributed 3.50 percent to the volume of return receipts.

Table 25
CONTRIBUTIONS TO CHANGE IN
RETURN RECEIPTS VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	9.2%	-0.451	-3.81%
Permanent Income	7.1%	0.504	3.51%
Certified Mail Volume	4.8%	0.756	3.50%
Adult Population	4.66%	1	4.66%
Dummy 1995q2			14.53%
Other Factors			0.33%
Total Change in Volume			22.71%

d. Adult Population

Growth in adult population explains a 4.65 percent increase in the volume of return receipts.

e. Dummy for 1995Q2

The reported volume of return receipts displayed a sharp increase beginning in 1995q2. To capture this change, a dummy variable is included in the volume equation. Table 25 shows that this variable explains a 14.53 percent increase in the volume of return receipts.

f. Other Factors

Table 25 shows that other factors contributed only a 0.33 percent increase in return receipts volume over the past five years. However, return receipt service volume has declined in the last two years, after growing strongly in 1997. One factor which has contributed to this decline has been the fall in the use of certified mail. Although return receipt mail service is available in conjunction with both the certified and insurance services, it is more common for mailers to combine return receipts with certified mail.

4. Volume Forecast

The Base Year volume of return receipts is 228.610 million. Non-rate factors, including the change in the volume of certified mail, are projected to increase return receipt volume by 10.63 percent between the Base Year and the Test Year. Including the impact of the change in the real price of return receipts between the Base Year and the Test Year leads to a before-rates forecast of 252.559 million pieces.

The after-rates forecast includes the impact of the change in certified mail volume due to the proposed increase in certified mail price. Combining the non-rate and postal rate impacts results in an after-rates Test Year volume forecast of 220.088 million.

Table 25A
Volume Forecast of Return Receipts

	Before-Rates	After-Rates
Base Year Volume (Millions)	228.610	228.610
Non-Rate Impact	10.63%	4.68%
Postal Rate Impact	-0.15%	-8.05%
Test Year Volume (Millions)	252.559	220.088

G. Money Orders

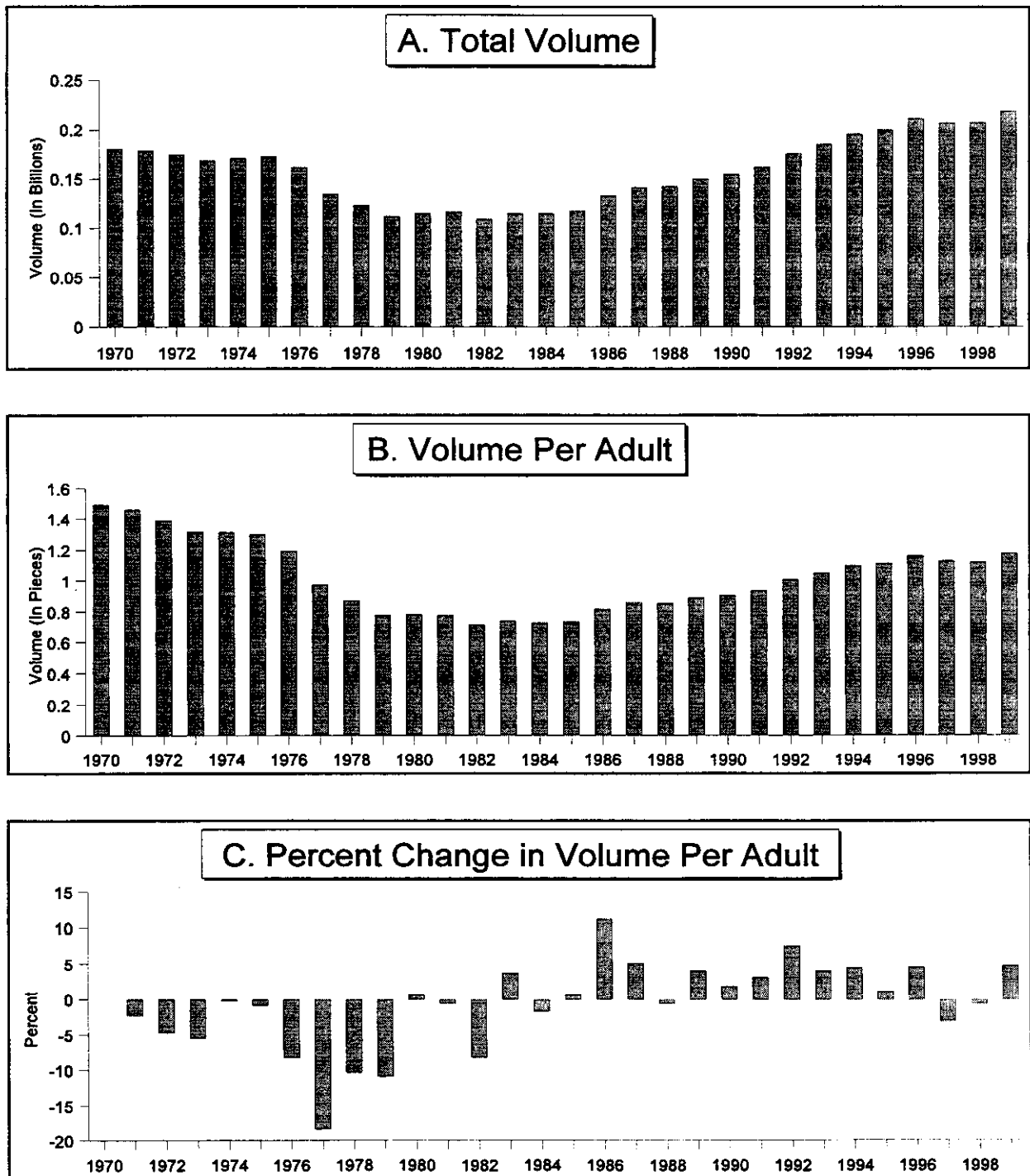
1. Definition

Money orders are used as a substitute for cash or checks in making financial transactions. The current maximum amount is \$700 for a single money order. There is a limit of \$10,000 per individual per day. Money orders also are used to transfer funds received during collect-on-delivery transactions to the firm sending the merchandise. Money orders must be paid for with cash, traveler's checks payable in U.S. dollars (if the purchase is for at least 50 percent of the value of the traveler's checks), or with ATM/Debit cards approved by the USPS.

2. Volume History

Figure 26 shows the recent volume history for money order transactions. Volume generally declined in the 1970s, falling from 181.0 million in 1970 to 115.2 million in 1980. Volume increased to 154.8 million in 1990 and reached 219.1 million transactions in 1999. The bottom panel of Figure 26 shows annual percentage changes in volume per adult. Volume per adult fell in every year from 1970 to 1979 and has risen in virtually every year since then. In 1999, money order volume was 1.17 pieces per adult.

Figure 26
Money Order



3. Factors Affecting Volume

a. Price

It is estimated that the long-run own-price elasticity of money orders is -0.430. Table 26 shows that the real own-price of money orders increased 1.0 percent over the past five years. Applying the estimated elasticity to this increase in price yields a decline in money order volume of 0.43 percent.

b. Income

The elasticity of money order volume with respect to permanent income per adult is estimated to be 0.505. Permanent income per adult increased 7.1 percent over the past five years. Table 26 shows that this increase in permanent income per adult contributed 3.53 percent to the volume of money orders.

c. Adult Population

Growth in adult population contributed 4.67 percent to the volume of money orders over the past five years.

d. Other Factors

Table 26 shows the effect on money order volume of changes in money order price, income, and adult population. In addition to these effects, other factors contributed 4.10 percent to the volume of money orders over the past five years.

Table 26
CONTRIBUTIONS TO CHANGE IN
MONEY ORDER VOLUME FROM 1994 to 1999

<u>Variable</u>	<u>Percent Change In Variable</u>	<u>Elasticity</u>	<u>Estimated Effect of Variable on Volume</u>
Own price	1.0%	-0.430	-0.43%
Permanent Income	7.1%	0.505	3.53%
Adult Population	4.66%	1	4.66%
Other Factors			4.10%
Total Change in Volume			11.87%

Since money orders are used to conduct financial transactions, the general rise in financial transactions will stimulate growth in money order volume to some extent. In particular, money orders provide a means of making payments for individuals who do not have a regular checking account. Over the past years, declines in interest rates paid to depositors, increases in banking fees, and the imposition of higher minimum balances have made bank checking accounts less attractive. Small depositors may have found it too costly to maintain a regular checking account, making higher use of postal money orders attractive. Foreign tourists and immigrants are also less likely to have a regular checking account, and will use money orders instead for domestic and international financial transactions.

The growth of Internet commerce has also increased the use of money orders. For example, many online auction sales are made by individuals who are not equipped to take credit card payments. Checks and money orders are the most common methods of payment for these transactions.

1 Offsetting these positive effects on money order volumes has been an increase
2 in Internet Fraud which may be discouraging the use of both money orders and checks.
3 According to a report by the US National Fraud Information Center, in 93 percent of
4 fraud cases, the buyer's payment was made offline by check or money order. ["Going
5 Once, Going Twice . . . Scammed!" *Internet Fraud Watch*, <http://www.fraud.org>,
6 February 23, 1999].

7 Also reducing the volume of postal money orders is the wider availability of non-
8 postal money orders. In 1999, 42 percent of credit unions will offer money order
9 services, up from 37 percent in 1993. [Mazanet, Shirley. "Money Orders Help Members
10 and Bottom Line," *Credit Union Magazine*, January 1999]. Money orders may also be
11 obtained from many drug stores, convenient stores, currency exchanges, and grocery
12 stores. In many cases, these non-postal money order alternatives have more
13 convenient locations and longer hours of operation than the Postal Service.

14 **4. Volume Forecast**

15 Table 26A shows that the Base Year volume of money orders is 219.059 million.
16 Non-rate factors are projected to increase volume by 4.06 percent between the Base
17 Year and the Test Year. If there is no change in rates, the real decline in the price of
18 money orders is projected to increase volume by 3.09 percent, producing a Test Year
19 volume forecast of 234.993 million pieces. If the rates proposed by the Postal Service
20 in this case are adopted, the increase in the real price of money orders is projected to
21 reduce volume by 0.66 percent between the Base Year and the Test Year. Therefore,
22 the after-rates Test Year forecast of money orders is 226.435 million.

23
24
25

Table 26A
Volume Forecast of Money Orders

	Before-Rates	After-Rates
Base Year Volume (Millions)	219.059	219.059
Non-Rate Impact	4.06%	4.06%
Postal Rate Impact	3.09%	-0.66%
Test Year Volume (Millions)	234.993	226.435

TECHNICAL APPENDIX
FORECAST MODEL
ACCOMPANYING USPS-T-6, R2000-1

**TECHNICAL APPENDIX
FORECAST MODEL
ACCOMPANYING USPS-T-6, R2000-1**

TABLE OF CONTENTS

	<u>PAGE</u>
I. INTRODUCTION	A-1
II. FORECAST METHODOLOGY	A-2
A. General Approach	A-2
B. Explanation of Projection Factors	A-3
1. Econometric Factors	A-3
2. Net Trend Factor	A-4
C. Forecast Error Analysis Program	A-5
III. FORECAST MODEL STRUCTURE	A-7
A. General Framework	A-7
B. Description of Base Volume and Individual Projection Factors	A-10
1. Base Volume (BASEVOL)	A-10
2. Quarter Length Multiplier (QM _t)	A-12
3. Net Trend Multiplier (TM _t)	A-13
4. Seasonality Multipliers (SM _t)	A-14
5. Volume Adjustment Multiplier (VA _t)	A-14
a. Single-Piece First-Class Letters	A-15
b. Standard Regular Automation 5-Digit Letters	A-15
c. Standard ECR Basic Letters	A-17
6. Nonrate Effect Multiplier (NRM _t)	A-18
7. Share Multiplier (S _t)	A-19
8. Rate Effect Multiplier (RM _t)	A-20
C. Presentation of Projected Volumes	A-24
1. Before Rates	A-24
2. After Rates	A-25
IV. FORECAST ERROR ANALYSIS PROGRAM	A-28
A. Description of Forecast Error Analysis Program	A-28
1. Forecast Errors by Quarter	A-29
2. SPLY Differences in Forecast Errors	A-29
3. Four-Quarter Average of SPLY Differences	A-30
4. Five-Year Mechanical Net Trend	A-30
B. Interpretation of Forecast Error Analysis Program Results	A-30
1. Smooth Net Trend	A-31
2. Random Shocks	A-32
3. Changes in the Net Trend	A-33
C. Forecast Error Analysis Output	A-34

TECHNICAL APPENDIX: FORECAST MODEL

1 I. INTRODUCTION

2 This Technical Appendix describes the forecasting methodology. The approach used
3 to forecast mail volumes is to calculate the ratio of mail volume in the projection period to
4 mail volume in the base period. First, the ratio of an explanatory variable in the projection
5 period to its value in the base period is calculated. This ratio is then raised to the power
6 of the elasticity of mail volume with respect to the variable. The resulting expression,
7 called the projection factor for that variable, is multiplied together with the projection factors
8 for all the other explanatory variables to arrive at the ratio of volume in the projection period
9 to volume in the base period. Multiplying this ratio by the Base Year volume yields a
10 forecast of mail volume in the projection period.

11 The projection period includes GFY 2001 (the Test Year in this case) and GFY 2002.
12 The base period is PFY 1999, also known as the Base Year. Volume projections are made
13 in this manner for each future quarter through the Test Year, and then the quarters of the
14 Test Year are summed and adjusted for timing differences between a Postal and
15 Government Fiscal Year to obtain the projection of Test Year volume.

16 The organization of this appendix is as follows. The next section, Section II, contains
17 a descriptive overview of the model and the general approach used by the Postal Service
18 to project mail volumes. Section III presents an in-depth description of the model and
19 techniques used in the postal volume forecasts. First, the derivation of a simplified version
20 of the postal forecasting model involving projection factors from a conventional demand

equation is demonstrated, and then the full version of the postal forecasting model is spelled out (Section III.A). This includes definitions and formulas for all components of the final forecast. This is followed by descriptions of the procedures used to compute the Base Year volume and various individual projection factors (Section III.B). Finally, the calculation of projected volumes is summarized in this section (Section III.C).

The last section of this appendix describes the use of the Forecast Error Analysis Program based on a five year in-sample forecast. First, the output of the Forecast Error Analysis Program is defined and described (Section IV.A). Next, the interpretation of the results from the program is considered (Section IV.B) along with a discussion of its use in choice of net trend for the forecast. Then the entire output of the Forecast Error Analysis Program is presented as Appendix Tables 3 through 32 (Section IV.C).

II. FORECAST METHODOLOGY

A. General Approach

The present summary of the postal volume forecasting method is offered as an overview. The full details are presented in Sections III and IV below, and these are further supplemented by step-by-step calculations applying the method to three subclasses in Workpaper 2, "Step-by-Step Calculation of Volume Projections."

The forecasting model projects mail volumes separately for various mail categories. For each mail category, base period volume (consisting of the volume in the most recent four quarters, i.e. 1999Q1 through 1999Q4) is multiplied by the product of various projection factors to arrive at the volume forecast. The specific projection factors for various mail categories are based on parameters estimated using quarterly time series equations for subclasses, along with factors to account for differences in quarter length,

seasonality and in some cases base volume adjustment multipliers which are largely mechanical in nature will be described below. For some mail categories, net trend projection factors are used to take account of influences too recent to be incorporated in the quarterly time series equations. Share projection factors are applied to First-Class letters, First-Class cards, Standard A Regular, and Standard A Nonprofit mail to separate the projected total volume into projected volumes of the worksharing categories in the subclass.

B. Explanation of Projection Factors

1. Econometric Factors

The projection factor approach used in the mail forecasting model can be derived from a usual demand function of the type $Q_t = aP_t^b Y_t^c$, where Q is quarterly mail volume, a is a constant, P is mail price, Y is income, b and c are elasticities of demand with respect to price and income respectively, and t refers to time period. Q_t , the volume for the period is expressed as a function of Q_0 , the volume in the base period, in order to derive projection factors. Since $Q_t = aP_t^b Y_t^c$ and $Q_0 = aP_0^b Y_0^c$, the ratio Q_t/Q_0 can be expressed as $aP_t^b Y_t^c / aP_0^b Y_0^c$, or $(P_t/P_0)^b (Y_t/Y_0)^c$. Therefore,

$$(1) \quad Q_t = Q_0 (P_t/P_0)^b (Y_t/Y_0)^c.$$

The term $(P_t/P_0)^b$ in Equation (1) is the price projection factor and the term $(Y_t/Y_0)^c$ is the income projection factor. Equation (1) shows that a projection factor is the ratio of the value of a variable in the projection period to its value in the base period, raised to the power of the elasticity of that variable with respect to volume.

In the actual forecast, additional projection factors arise from more extended demand equations. These may include up to four projection factors for current and lagged prices, two projection factors for income, since measures of both permanent and transitory income

are used in many equations, seasonal projection factors, and projection factors for various other variables that differ from subclass to subclass. Normalization by adult population, quarter length adjustments and conversions between annual and quarterly volumes are among the other details in the forecasting model.

2. Net Trend Factor

The net trend projection factor used for some categories to take account of influences not measured econometrically, takes the form e^{gt} where g is the proportionate change in volume per unit of time due to non-econometrically measured influences and t is the number of periods from the middle of the base period for which volume is being projected. As a starting point for estimating whether a net trend term is needed in the forecast, a net trend term is calculated from the forecast error from an in-sample forecast based on the last five years (in this case 1994Q1-1994q4 to 1999Q1-1999Q4).

Once the in-sample forecast is made, the five year net trend is computed by comparing the actual volumes in the last year with the in-sample forecasts for the same period. To illustrate calculations of the five year net trend, let Q_a be the sum of actual mail volumes for the final year and let Q_p represent the volumes which are predicted by the in-sample forecast for the final year using a Base Year five years earlier. The five year net trend is computed by the equation $(1 + g)^5 Q_p = Q_a$ (where the net trend is denoted by g) or expressed in terms of the net trend g :

$$(2) \quad g = (Q_a / Q_p)^{1/5} - 1$$

Interpretation of the five-year net trend can be illustrated by considering a hypothetical example. Assume that the five-year net trend computed with the formula above is used

1 to compute the net trend projection factor. Further, assume that the in-sample forecast
2 produces a net trend of 0.02 or 2%. Using the net trend of 2% implies that those non-
3 econometric influences which caused mail volumes to grow by an annual compound rate
4 of 2% above the volumes predicted from the in-sample forecast are expected to continue
5 into the future.

6 The annual net trend is denoted g and is the proportionate change (or if multiplied by
7 100, the percentage change) in volume from one year to the next due to influences not
8 measured econometrically. The annual net trend ratio expresses the effect in ratio form
9 and is the ratio of volume in a year to volume in the previous year in the absence of
10 econometrically measured reasons for change. Algebraically, the annual net trend ratio
11 is $1 + g$. The annual net trend ratio is sometimes referred to as the annual net trend
12 projection factor with the word "annual" being important in making a distinction between
13 this magnitude and the net trend projection factor or multiplier which allows the net trend
14 to act over the entire forecast period.

15 The net trend projection factor or multiplier used in forecasting volume for future
16 quarters allows the net trend to operate for the length of time between the Base Year and
17 the future quarter. Algebraically, the net trend projection factor is $(1+g)^{m/4}$ where m is the
18 number of quarters between the midpoint of the Base Year and the future quarter.

19 C. Forecast Error Analysis Program

20 The five-year net trend as given by Equation (2) uses the most recent five years of
21 mail volume data to evaluate influences not measured econometrically. The five year net

1 trend calculation only requires data for two years, year one and year five. The Forecast
2 Error Analysis Program, however, examines all of the data in the five-year period to
3 determine whether the in-sample forecast errors exhibit a stable pattern, and whether the
4 effect of these are systematic patterns within the period. The Forecast Error Analysis
5 Program is described in detail in Section IV of this appendix.

6 Use of the Forecast Error Analysis Program may be illustrated by considering two
7 examples. A first example is a case where growth rates in actual versus in-sample
8 forecasts are negative in the initial 10 quarters and positive in the latter 10 quarters while
9 the five year net trend is zero. In this case there may have been an unmeasured shift in
10 demand 2½ years ago which increased mail volumes. Further, as corroborated by non-
11 econometric evidence, the change is expected to continue to produce growth in volume.
12 Here, the average growth from the last 2½ years (obtained from the Forecast Error
13 Analysis Program) may be used as the net trend. In a second example the five-year net
14 trend is positive while an analysis of year by year growth is sporadic--positive about half
15 the time and negative the other half. Further, there are no non-econometric changes that
16 would explain the volume movements and no changes are expected in the forecast period.
17 In this case, a zero net trend may be chosen. In the majority of cases, a zero net trend is,
18 in fact, used.

III. FORECAST MODEL STRUCTURE

An overview of the postal forecasting methodology was presented in Section II. In this section, the mechanics are described. After reviewing the general framework used to forecast volume and outlining the mechanics of computing base period volume, details of projection factors and calculation of projected volume are described. The projection factors (also referred to as multipliers) include the quarter length multiplier, the rate effect multiplier, the non-rate effect multiplier, and the composite multiplier which contains the seasonal multiplier, the share multiplier, and the net trend multiplier, for those mail categories for which either share multipliers or net trend multipliers are included.

A. General Framework

The theoretical underpinning of the forecasting model is the demand equation which expresses volume (Q_T) as a function of economic factors which influence mail demand. A simple example using price (P_T) and income (Y_T) illustrates the basic principles:

$$(3) \quad Q_T = aP_T^b Y_T^c$$

If $T=0$ is the Base Year and $T=t$ is the projected period, the forecasting equation is based on dividing the demand function for period t by the demand function for the base period:

$$(4) \quad Q_t/Q_0 = (P_t/P_0)^b (Y_t/Y_0)^c$$

which is equivalent to Equation (1). The term $(P_t/P_0)^b$ is the price projection factor which is also part of the rate effect multiplier (RM_t), and $(Y_t/Y_0)^c$ is the income projection factor which is a component of the nonrate effect multiplier (NRM_t). The projection factor or multi-

plier is generally expressed as the ratio of the value of a variable in the projected quarter, t , to the value of the variable in the Base Year, 0, raised to the power of the elasticity.

If projected volume, Q_t , is denoted as VOL_t and Base Year volume, Q_0 , is denoted as $BASEVOL$, a highly simplified projection equation is given by:

$$(5) \quad VOL_t = BASEVOL \times RM_t \times NRM_t$$

There are several more projection factors and multipliers beyond those indicated in the above simplified example. Separate projection factors are developed for each of the current and lagged own prices, for permanent and transitory income, and for seasonal effects. There are also projection factors for the variables pertaining to cross price effects and other quantified influences for the individual mail categories which are discussed in the Direct Testimony of Thomas Thress (USPS-T-7). Finally, for each mail category there is a net trend projection factor capturing the effect of non-econometric influences on mail volume.

A more detailed formulation of the forecasting model can be outlined by using the multiplier concept. Since separate forecasts are made for various different mail classes, a subscript i , referring to mail category, is introduced. The projection of volume for mail category i in quarter t is given by the following equation:

$$(6) \quad VOL_{it} = BASEVOL_i \times CM_{it} \times NRM_{it} \times S_{it} \times RM_{it}$$

where:

VOL_{it} is the number of projected pieces for the i th mail category in quarter t ,

$BASEVOL_i$ is the Base Year volume for mail category i ,

1	CM_{it}	is the composite multiplier measuring the impacts of
2		quarter length(QM_{it}), net trend(TM_{it}), seasonality(SM_{it}),
3		and volume adjustment(VA_i),
4		
5	QM_t	is the quarter length multiplier,
6		
7	TM_{it}	is the net trend effect multiplier,
8		
9	SM_{it}	is the seasonal effect multiplier measuring the effects on
10		volume of influences that are seasonal in nature, and
11		
12	VA_i	is the independent volume adjustment factor.
13		
14	NRM_{it}	is the nonrate effect multiplier measuring the combined
15		impact of income, population, cyclical activity and other
16		factors on volume,
17		
18	S_{it}	is the share multiplier,
19		
20	RM_{it}	is the rate effect multiplier measuring the effects of postal
21		rates on volume.
22		
23		

24 VOL_{it} is projected on a before-rates basis in the absence of any postal rate change
 25 and on an after-rates basis using prices predicted to prevail if the recommended postal rate
 26 changes are adopted. All multipliers other than rate effect multipliers, share multipliers,
 27 and cross volume multipliers, which are components of the nonrate effect multiplier, are
 28 generally identical in the before-rates and after-rates forecasts.

29 The mechanics of computing $BASEVOL_i$ and the various multipliers are presented in
 30 the next subsection.

31
32
33

B. Description of Base Volume and Individual Projection Factors

1. Base Volume (BASEVOL)

Base volumes are traditionally set equal to historical volumes over the most recent four quarters. In this rate case, the most recent four quarters of data are the four quarters of the 1999 postal year. For many mail categories, the base volume is the volume of the entire subclass volume, e.g. Periodicals Regular mail. For some mail categories, the base volume is a category volume, i.e., the volume of some subset of the subclass. For example, within First-Class letters, separate forecasts are made for single-piece and workshared letters, using separate base volumes as shown below.

	Single-Piece <u>Letters</u>	Workshared <u>Letters</u>
1999Q1	12,291.918	9,805.607
1999Q2	13,272.506	10,234.309
1999Q3	12,536.670	10,000.608
<u>1999Q4</u>	<u>15,311.527</u>	<u>12,644.316</u>
Base Volume	53,412.621	42,684.840

Appendix Table 1 gives the base volumes used in the volume forecasts.

Appendix Table 1
Base Volumes Used in Volume Forecasts
(In millions)

Mail Subclass or Category	Base Volume
First-Class Single-Piece Letters	53,412.621
First-Class Workshared Letters	42,684.840
First-Class Stamped Cards	420.287
First-Class Private Single-Piece Cards	2,414.013
First-Class Private Workshared Cards	2,433.524
Mailgrams	4.306
Periodicals In-County Mail	894.488
Periodicals Nonprofit Mail	2,136.552
Periodicals Classroom Mail	59.816
Periodicals Regular Mail	7,205.661
Standard A Regular Basic Letters	4,828.009
Standard A Regular Presort Letters	1,315.387
Standard A Regular Basic Nonletters	19,361.313
Standard A Regular Presort Nonletters	12,986.101
Standard A ECR Letters	11,411.571
Standard A ECR Nonletters	21,357.500
Standard A Nonprofit Basic Letters	2,339.915
Standard A Nonprofit Presort Letters	301.862
Standard A Nonprofit Basic Nonletters	6,796.422
Standard A Nonprofit Presort Nonletters	1,495.750
Standard A Nonprofit ECR Letters	1,714.233
Standard A Nonprofit ECR Nonletters	1,226.467

Appendix Table 1
Base Volumes Used in Volume Forecasts
(In millions)
Continued

Mail Subclass or Category	Base Volume
Standard B Parcel Post Inter-DBMC Mail	62.263
Standard B Parcel Post Intra-DBMC Mail	35.863
Standard B Parcel Post DBMC Mail	227.895
Standard B Bound Printed Matter	488.627
Standard B Special Rate Mail	200.243
Standard B Library Rate Mail	28.010
Postal Penalty Mail	381.981
Free-for-the-Blind and Handicapped Mail	52.718
Registered Mail	13.768
Insured Mail	48.054
Certified Mail	267.068
Collect-on-Delivery	4.026
Return Receipts	228.610
Money Orders	219.059

2. Quarter Length Multiplier (QM_i)

The quarter length multiplier is needed to convert projections from the Base Year volume to individual future quarters. The quarter length multipliers distribute yearly volume proportionately according to the number of accounting periods which make up each quarter. There are thirteen 4 week accounting periods in the Postal Fiscal Year, distributed into 3 accounting periods in each of the fall, winter and spring quarters and 4 accounting periods in the summer quarter. Therefore, for the fall, winter, and spring quarters (postal

1 quarters 1, 2, and 3), the fraction 3/13 is applied as a multiplier. For summer 4/13 is used.

2 In terms of the postal forecasting equation $QM_1 = QM_2 = QM_3 = 3/13$ and $QM_4 = 4/13$.

3 **3. Net Trend Multiplier (TM_{it})**

4 Net trend multipliers are used in the forecasts of First-Class single-piece cards, First-
5 Class workshare cards, Standard A Nonprofit mail, Standard A Nonprofit ECR mail, Intra-
6 BMC parcel post, Inter-BMC parcel post, and DBMC parcel post. The net trend multiplier
7 for the *i*th mail category in the *t*th quarter to be projected, TM_{it} , is calculated according to
8 the following equation:

9 (7)
$$TM_{it} = (1 + g_i)^{(m_i/4)}$$

10 where:

- 11 g_i is the annual net trend for the *i*th mail category expressed as a
12 proportionate change, and
13 m_i is the number of quarters from the midpoint of the Base Year to the middle
14 of quarter *t*.
15 m_i is the number of quarters from the midpoint of the Base Year to the middle
16 of quarter *t*.
17

18 As discussed earlier, the term $(1 + g_i)$ is referred to as the annual net trend ratio. It
19 is the ratio of the volume in a year to the volume in the previous year if the only
20 consideration acting to change volume was the net trend. For the forecast, it must be
21 raised to the power of the number of years from the base to the Test Year, which is
22 calculated as the number of quarters between the midpoint of the Base Year divided by
23 four. The four quarters of the Test Year are 2000Q1 through 2000Q4. The values of m_i
24 are respectively, $4\frac{1}{2}$, $5\frac{1}{2}$, $6\frac{1}{2}$, and $7\frac{1}{2}$.
25

4. Seasonality Multipliers (SM_t)

The general approach to seasonal variation in the regressions is to measure seasonal variation in volume per adult per business day relative to a series of seasonal variables reflecting periods of the Gregorian calendar. To obtain seasonal projection factors for the forecast, this seasonal index is converted to seasonals relative to the entire year by solving for the set of seasonal multipliers that will maintain the relation implied by the regression seasonals, but will average to one.

The formula for the seasonal multipliers gives the proportion of annualized volume allocated to quarter t and is:

$$(8) \quad SM_t = \frac{e^{S_t}}{w_t e^{S_t} + w_{t-1} e^{S_{t-1}} + w_{t-2} e^{S_{t-2}} + w_{t-3} e^{S_{t-3}}}$$

where w_t is the share of total business days within the past year falling within quarter t , and S_t is a seasonal index which combines the effect of the seasonal variables into a single seasonal index, which varies by quarter. A full treatment of seasonality in the regression equations presented with this testimony is presented in the direct testimony of Thomas Thress (USPS-T-7).

5. Volume Adjustment Multiplier (VA_t)

The volume-adjustment multiplier is used to account for shifts which are known to affect volumes, yet which are not embedded in the sample period. In this case, there are volume-adjustment multipliers for single-piece First-Class letters, Standard A Regular 5-digit automation letters, and Standard A ECR basic letters.

a. Single-Piece First-Class Letters

As a result of rule changes enacted following R97-1, the volume of single-piece First-Class letters increased by approximately 0.5 percent. This shift occurred for two reasons, the changing of the weight breakpoint between First-Class letters and Priority Mail from 11 to 13 ounces and the elimination of the Standard single-piece subclass. The exact derivation of the 0.5 percent figure is in witness Thress' testimony (USPS-T-7, pp. 21-22).

The effect of R97-1 is modeled econometrically through a dummy variable equal to zero prior to R97-1, equal to one thereafter, with a coefficient of 0.005. This variable can be converted into a forecasting multiplier by taking the anti-log of the dummy coefficient ($e^{.005} = 1.005$), and applying this multiplier after R97-1.

The value of this variable throughout the forecast period will be equal to 1.005, since all of the forecast period is post-R97-1. R97-1 was only in effect for 189 of the 279 business days in the base period, however. Hence, the base multiplier for the R97-1 dummy variable is equal to $1 + (189/279) \cdot .005$, or 1.0034. The R97-1 volume-adjustment multiplier for single-piece First-Class letters is then equal to the forecasted multiplier (1.005) divided by the base multiplier (1.0034), or 1.0016.

b. Standard Regular Automation 5-Digit Letters

As a result of R97-1, the price of Standard Regular Automation 5-digit letters was set below the price of Standard ECR basic letters. This caused some mailers to shift their mail from Standard ECR basic letters to Standard Regular Automation 5-digit letters. This is dealt with in the Standard Regular and ECR demand equations by including a dummy variable equal to zero prior to R97-1 and equal to one starting in R97-1 in these two equations. This dummy variable has an estimated coefficient of 0.087786 in the Standard Regular equation and -0.105803 in the Standard ECR equation. Taking the anti-log of

1 these coefficients, this translates into an increase in Standard Regular volume of 9.18
2 percent and a decrease in Standard ECR volume of 10.04 percent after R97-1.

3 The volume that shifts between these two categories can be expected to come
4 exclusively from the automation 5-digit letters category of Standard Regular mail and the
5 basic letters category of Standard ECR mail. This complicates the calculation of volume-
6 adjustment multipliers somewhat.

7 First, the 9.18 percent figure is converted into a number of pieces, using the volume
8 of Standard Regular mail in the base period (38,490.810 million pieces), to yield a base-
9 period total of 3,531.704 million pieces that would be expected to shift. Of course, some
10 of the mail volume in the base period has already shifted from ECR mail, as part of the
11 base period occurred after the implementation of R97-1. The specific volume of Standard
12 Regular mail that shifted from ECR was calculated for each of the four quarters of the base
13 period, by taking Standard Regular volume and multiplying it by the R97-1 dummy
14 multiplier associated with that quarter. This yields a quarter-by-quarter shift of 407.047
15 million pieces in 1999Q2, 783.780 million pieces in 1999Q3, and 993.346 million pieces
16 in 1999Q4, for a total of 2,184.173 million pieces in the base period that are the result of
17 the R97-1 rate crossover.

18 The difference between these two numbers ($3,531.704 - 2,184.173 = 1,347.531$) is
19 the number of additional pieces expected in Standard Regular mail per year in the forecast
20 period because the forecast period will be entirely post-R97-1. This additional volume is
21 expected to occur entirely in Standard Regular automation 5-digit letters. Hence, a
22 volume-adjustment multiplier was applied to automation 5-digit letters which was equal to
23 one plus 1,347.531 divided by the volume of Standard Regular automation 5-digit letters
24 in the base period (6,312.366), for a volume-adjustment multiplier of 1.2135.

c. Standard ECR Basic Letters

The Standard ECR basic letters volume-adjustment multiplier was calculated in the same way as the automation 5-digit letters adjustment. First, the 10.04 percent figure derived above ($e^{-.105803}-1$) is converted into a number of pieces, using the volume of Standard ECR mail in the base period (32,769.071 million pieces), to yield a base-period total of 3,289.954 million pieces that would be expected to shift out of the ECR subclass. Some of the mail volume in the base period has already shifted from ECR mail, as part of the base period occurred after the implementation of R97-1. The specific volume of mail that has shifted out of ECR was calculated for each of the four quarters of the base period, by taking Standard ECR volume and multiplying it by the R97-1 dummy multiplier associated with that quarter. This yields a quarter-by-quarter shift of 448.621 million pieces in 1999Q2, 794.825 million pieces in 1999Q3, and 1,026.878 million pieces in 1999Q4, for a total of 2,270.324 million pieces that are no longer in the base period because of the R97-1 rate crossover.

The difference between these two numbers ($3,289.954 - 2,270.324 = 1,019.631$) is the number of additional pieces expected to no longer be sent as Standard ECR mail per year in the forecast period because the forecast period will be entirely post-R97-1. This loss in volume is expected to occur entirely in Standard ECR basic letters. Hence, a volume-adjustment multiplier was applied to ECR basic letters which was equal to one minus 1,019.631 divided by the volume of Standard ECR basic letters in the base period (5,724.858), for a volume-adjustment multiplier of 0.8219.

6. Nonrate Effect Multiplier (NRM_i)

The non-rate effect multiplier adjusts the volume projections for non-price and non-seasonal parameters used in the regression equations. In addition, the non-rate effect multiplier adjusts the volume projections for changes in adult population.

The non-rate effect multiplier for category i in Test Year quarter t is:

$$(9) \quad NRM_{i,t} = \prod_{j=1}^{j=N_i} (W_{j,t} / W_j)^{e_{ij}}$$

where:

$W_{j,t}$ is the value of the jth non-rate effect variable in the Test Year quarter t,

W_j is the Base Year value of the jth non-rate effect variable,

e_{ij} is the elasticity of category i with respect to non-rate effect j, and

N_i is the number of non-rate effect variables contained in the ith mail category.

The non-rate variables used in constructing the non-rate multipliers for forecasting mail volumes and special services, the $W_{j,t}$ s above, include variables for adult population, consumption, computer prices, transitory income, permanent income, the price of paper, and other econometric variables.

The non-rate multiplier component for population is calculated consistent with the normalization of volume data in the regressions for adult population. This is done by including population in the non-rate effect multiplier with an elasticity of 1.0. The basis for this multiplier is illustrated by the following simple example:

Assume the regression is simply $\ln(\text{Volume}/\text{Population}) = a + \beta^*(\ln\text{Price})$. Then the forecast is given by the formula:

$$\text{Volume}_t / \text{Population}_t = \text{Base Volume} / \text{Population}_0 * \text{Price multiplier.}$$

1 Multiplying through by the current value of population, yields:

2 **(10)** $\text{Volume}_t = \text{Base Volume} \cdot (\text{Population}_t / \text{Population}_0) \cdot \text{Price multiplier}.$

3 It is apparent from this example that in volume projections, the population adjustment
4 can be made using the projection factor framework with the elasticity being set to 1.0.

5 One other detail is that for two mail products, the non-rate effect multiplier involves
6 cross volume projection factors, i.e., the volume of one mail product depends on the
7 volume of another. Specifically, the volume of insured mail is found to depend on the
8 volume of parcel post. It is also found that the volume of return receipts depends on the
9 volume of certified mail. These cross-volume effects are included as part of the non-rate
10 multiplier.

11 **7. Share Multiplier (S_t)**

12 The share multiplier is the projected share of the worksharing category in the mail
13 volume of the subclass of which it is a part. Needs for projecting worksharing volumes
14 occur for First-Class letters and cards, Standard A Regular, Standard A ECR, Standard A
15 Nonprofit and Standard A Nonprofit ECR. The shares for the subcategories total to one
16 for each mail type. The projection of worksharing categories is completed by applying the
17 projected worksharing shares to the projected volume just described that used total
18 subclass volume as the base volume, thus arriving at individual worksharing volumes.

19 A combination of regression approach and base period projection method is used to
20 project the worksharing shares. A detailed description of the derivation of the before- and

after-rates worksharing shares is presented in the direct testimony of Thomas Thress (USPS-T-7).

8. Rate Effect Multiplier (RM_t)

The rate effect multiplier adjusts the mail volume forecast for responses to changes in the price of a particular category of mail (own price) and to changes in the price of other mail categories (cross prices). The rate effect multiplier takes on two values—one for the before-rates forecast and one for the after-rates forecast. The rate effect multiplier is the product of terms which have the following form:

$$(11) \quad (P_t / \bar{P}_0)^e$$

where:

P_t is deflated price in the projection quarter,

\bar{P}_0 is the deflated price in the Base Year, and

e is the elasticity or the percentage change in volume in response to a one percent change in the deflated price.

For a mail category where own price is the only price variable influencing volume, the rate effect multiplier has four component terms or submultipliers of the type shown above and is formulated as:

$$(12) \quad RM_t = (P_t / \bar{P}_0)^{e_0} (P_{t-1} / \bar{P}_1)^{e_1} (P_{t-2} / \bar{P}_2)^{e_2} (P_{t-3} / \bar{P}_3)^{e_3}$$

In this formula t is a quarter in a projected year and e_0, e_1, e_2, e_3 are price elasticities for the current quarter and lagged quarters. P_t, P_{t-1}, P_{t-2} , and P_{t-3} are projected real prices for

1 period t, and one, two and three quarters prior to t. $\bar{P}_0, \bar{P}_1, \bar{P}_2$, and \bar{P}_3 are the Base Year

2 prices which are calculated as follows:

3 \bar{P}_0 is the weighted average of deflated prices for 1999Q1 through 1999Q4 where
4 weights depended on the length of the quarter. Q1, Q2 and Q3 receive weights
5 of 3/13 while Q4 receives a weight of 4/13.

6 \bar{P}_1 is the weighted average of deflated prices for 1998Q4 through 1999Q3.

7 \bar{P}_2 is the weighted average of deflated prices for 1998Q3 through 1999Q2.

8 \bar{P}_3 is the weighted average of deflated prices for 1998Q2 through 1999Q1.

9 The ratio of the real price in quarter t, P_t , to the Base Year weighted average price, \bar{P}_0
10 raised to e_0 , the current elasticity, gives the response to price changes in period t.
11 Similarly, the ratio $(P_{t-1}/\bar{P}_1)^{e_1}$ gives the volume response percentage in period t to price
12 changes from the previous quarter. $(P_{t-2}/\bar{P}_2)^{e_2}$ and $(P_{t-3}/\bar{P}_3)^{e_3}$ give volume percentage
13 responses to price changes from two and three quarters prior to the current quarter. (Note
14 that these percentage responses are numbers such as 1.005 which would represent a ½
15 of one percent volume change due to the price change).

16 While the discussion above accounts for response of subclass volume to changes in
17 own price, the rate effect multiplier also adjusts for changes in the price of competing
18 categories for certain mail classes. These cross price responses are obtained in the same
19 manner as the own price responses except that cross prices and cross price elasticities are
20 used. If P'_t is price of the competing mail class and e' is the cross price elasticity, the
21 cross price response is given by

22 (13)
$$(P'_t/\bar{P}'_0)^{e'_0} (P'_{t-1}/\bar{P}'_1)^{e'_1} (P'_{t-2}/\bar{P}'_2)^{e'_2} (P'_{t-3}/\bar{P}'_3)^{e'_3}$$

The interpretations of the factors are similar to the interpretations of own price responses. $(P'_t/\bar{P}_0)^{e_0}$ gives the volume response to changes in the price of the competing mail category while $(P'_{t-1}/\bar{P}_1)^{e_1}, (P'_{t-2}/\bar{P}_2)^{e_2}, (P'_{t-3}/\bar{P}_3)^{e_3}$ give volume responses to changes in price of the competing category for earlier quarters.

For example, the volume forecast of First-Class workshared letters includes cross-prices for First-Class workshared cards and Standard A Regular mail, and the worksharing discount of First-Class letters.

RM_t can be written using the nomenclature Π which represents multiplication:

$$(14) \quad RM_t = (P'_t/\bar{P}_0)^{e_0} (P'_{t-1}/\bar{P}_1)^{e_1} (P'_{t-2}/\bar{P}_2)^{e_2} (P'_{t-3}/\bar{P}_3)^{e_3} = \prod_{k=0}^{k=3} (P'_{t-k}/\bar{P}_k)^{e_k}$$

where k is the number of quarters prior to the projection quarter. This equation represents the rate effect multiplier for a mail class where there are no cross price effects.

In those mail classes where both own and cross price effects exist, the rate multiplier is given by:

$$(15) \quad RM_t = \prod_{j=1}^{j=n} \prod_{k=0}^{k=3} (P'_{j,t-k}/\bar{P}_{j,k})^{e_{j,k}}$$

In this formula, n refers to the number of mail categories whose prices influence volume (own plus the number of mail categories for which cross price is included), and the subscript j denotes the specific own- or cross-price mail category. For example, in First-Class workshared letters n = 4 and j = 1 would represent own price effects, while j = 2

would represent the workshared cards cross price, $j = 3$ would represent the Standard A Regular cross price, and $j = 4$ represents the First-Class worksharing discount cross price.

To obtain an expression for use in the basic forecasting equation, notation is needed to indicate which mail category (subscript i) and which projection quarter (subscript t) are being considered. Introducing this notation, the rate effect multiplier for mail category i in quarter t is:

$$(16) \quad RM_{it} = \prod_{j=1}^{j=N_i} \prod_{k=0}^{k=3} (P_{j,t-k} / \bar{P}_{j,k})^{e_{ij,k}}$$

where:

N_i is the number of mail categories whose prices impact volume for category i (for example N_i is 4 for First-Class workshared letters in view of the influence of own price and three cross prices),

$P_{j,t-k}$ is the deflated value of the j th own or cross price influencing volume category i in quarter $t-k$ where k is the order of the lag effect (for example $P_{1,t-3}$ refers to deflated price 3 quarters prior to the projection quarter),

$\bar{P}_{ij,k}$ is the Base Year deflated value of the j th own or cross price lagged k quarters and is further defined in the formula below, and

$e_{i,j,k}$ is the elasticity of category i mail volume with respect to the j th own or cross price with lag k (for example $e_{1,1,3}$ is the elasticity of volume with respect to the third lagged own price).

As noted before, the Base Year deflated value of the j th own or cross price lagged k quarters occurring in the above formula is a weighted average of historic values for years beginning k quarters prior to the Base Year:

$$(17) \quad \bar{P}_{ij,k} = \sum_{s=1}^{s=4} P_{ij,s-k} q_{s-k}$$

where:

$P_{i,j,(s-k)}$ is the deflated value of the j th own or cross price for category i in quarter $s-k$ where $s = 1, 2, 3, 4$ refers to the four consecutive quarters of the Base Year and $k=0, 1, 2, 3$ denotes the order of the lag, and

q_{s-k} is $4/13$ if quarter $s-k$ is a summer quarter and $3/13$ otherwise.

C. Presentation of Projected Volumes

1. Before Rates

The before-rates volume projections for all mail categories in the Test Year are given in the second column of Appendix Table 2 following this section. Step-by-step illustrations in Workpaper 2 detail the calculations of the Base Year volume and the multipliers for each effect for the four quarters of the Test Year using the before-rates assumptions for First-Class letters and First-Class cards.

The final step in projecting Government Fiscal Year Test Year volumes is to day-weight adjust the volumes. This allows for differences between Postal Years, consisting of 364 days running from late September to late September, and the Test Year, a Government Fiscal Year which is a full calendar year beginning October 1 and ending September 30, 365 days. A Postal Year consists of the four postal quarters summed. The adjustment from Postal Year to Government Fiscal year consists of subtracting the days from the first postal quarter which fell in to the previous Government Fiscal Year, and adding the remainder of quarter 1, all of quarters 2, 3, and 4, and the number of days from the first quarter of the next postal quarter which coincides with the number of days necessary to equalize the years. As an example, the 2001 Government Fiscal year is

1 given by the following: $(1 - 17/66) * V_{2001Q1} + V_{2001Q2} + V_{2001Q3} + V_{2001Q4} + ($
2 $17/66) * V_{2002Q1}$, where V_{2000Q1} means volumes in 2000Q1 and so forth.

3 **2. After Rates**

4 The Test Year after-rates volume projections are obtained in the same manner as
5 described for the before-rate projections, except that the rate effect multipliers and cross
6 volume multipliers are calculated using proposed new postal rates. The test-year after-
7 rates volume projections for all mail categories are presented in the third column of
8 Appendix Table 2 on the following pages.

Appendix Table 2
Detailed Before- and After-Rates
Volume Forecasts for First-Class and Standard A Mail

	Base Year	Before-Rates	After-Rates
FIRST-CLASS MAIL			
First-Class Letters & Flats	96,097.461	100,261.726	99,857.394
(Single-Piece)	53,412.621	53,213.828	52,877.658
(Nonautomated Presort)	4,205.094	2,930.521	2,586.288
(Automated)	38,479.747	44,117.377	44,393.448
(Basic Letters)	4,989.235	5,587.538	5,620.726
(Basic Flats)	44.805	51.973	52.293
(3-Digit Letters)	20,641.452	24,358.882	24,508.201
(5-Digit Letters)	11,283.206	12,283.788	12,362.727
(3/5-Digit Flats)	261.816	299.532	304.691
(Carrier-Route Letters)	1,259.233	1,535.664	1,544.810
First-Class Cards	5,267.824	5,584.931	5,440.951
Stamped Cards	420.287	445.823	415.873
Private Cards	4,847.537	5,139.108	5,025.078
(Single-Piece)	2,414.013	2,405.027	2,354.910
(Nonautomated Presort)	515.419	400.483	383.715
(Automated)	1,918.105	2,333.598	2,286.453
(Basic)	418.015	554.484	548.060
(3-Digit)	811.859	959.003	939.713
(5-Digit)	579.887	678.794	661.035
(Carrier-Route)	108.344	141.317	137.645
TOTAL FIRST-CLASS MAIL	101,365.286	105,846.657	105,298.345
STANDARD A MAIL			
Regular Rate Bulk	71,259.881	76,414.291	73,826.867
Regular	38,490.810	42,783.773	40,998.656
(Nonautomated)	6,323.525	5,520.725	5,304.047
(Basic Letters)	1,237.500	956.832	1,011.823
(Basic Nonletters)	1,003.933	1,014.669	1,045.493
(Presort Letters)	2,166.706	1,703.055	1,455.143
(Presort Nonletters)	1,915.387	1,846.169	1,791.588
(Automated)	32,167.285	37,263.048	35,694.609
(Basic Letters)	3,590.509	4,356.933	4,120.244
(Basic Flats)	311.454	406.981	347.480
(3-Digit Letters)	10,882.241	14,090.741	13,450.018
(5-Digit Letters)	6,312.366	6,373.435	6,378.638
(3/5-Digit Flats)	11,070.714	12,034.958	11,398.229

Appendix Table 2 (Continued)
Detailed Before- and After-Rates
Volume Forecasts for First-Class and Standard A Mail

	Base Year	Before-Rates	After-Rates
Enhanced Carrier-Route	32,769.071	33,630.517	32,828.211
(Automated)	2,178.293	1,891.225	1,851.903
(Basic Letters)	5,724.858	5,665.732	5,449.490
(Basic Nonletters)	11,350.433	12,058.148	11,794.849
(High-Density Letters)	446.495	411.860	393.108
(High-Density Nonletters)	1,365.116	1,466.638	1,479.259
(Saturation Letters)	3,061.925	2,830.582	2,692.107
(Saturation Nonletters)	8,641.951	9,306.331	9,167.496
Nonprofit Rate Bulk	13,874.650	14,418.001	14,227.455
Nonprofit	10,933.949	11,510.795	11,425.579
(Nonautomated)	3,486.325	2,923.601	3,040.715
(Basic Letters)	983.331	820.349	933.904
(Basic Nonletters)	236.901	223.335	232.032
(Presort Letters)	1,867.112	1,558.776	1,547.506
(Presort Nonletters)	398.981	321.141	327.272
(Automated)	7,447.624	8,587.194	8,384.865
(Basic Letters)	1,356.583	1,638.302	1,519.777
(Basic Flats)	64.962	94.221	86.820
(3-Digit Letters)	3,235.734	3,492.506	3,461.809
(5-Digit Letters)	1,693.576	2,107.728	2,085.641
(3/5-Digit Flats)	1,096.768	1,254.437	1,230.817
Nonprofit ECR	2,940.701	2,907.206	2,851.875
(Automated)	350.924	341.586	337.655
(Basic Letters)	734.446	719.099	705.557
(Basic Nonletters)	912.831	905.275	887.140
(High-Density Letters)	53.695	53.630	52.446
(High-Density Nonletters)	9.257	9.193	9.102
(Saturation Letters)	575.169	575.198	561.323
(Saturation Nonletters)	304.380	303.225	298.653
TOTAL STANDARD A MAIL	85,134.531	90,832.291	88,104.322

IV. FORECAST ERROR ANALYSIS PROGRAM

Section II of this appendix discussed the rationale for using net trend in volume projections and gave the formula for computing the five-year net trend (Equation 2). This section of the appendix describes how the Forecast Error Analysis Program is used to help evaluate whether net trends should be included in the volume forecasts. The discussion is divided into three sections. Section IV.A describes the details of the Forecast Error Analysis Program, Section IV.B discusses the interpretation of the Forecast Error Analysis Program, and Section IV.C presents the results of the Forecast Error Analysis Program for each subclass along with the five-year net trends and the net trends used in the volume forecast.

A. Description of Forecast Error Analysis Program

The Forecast Error Analysis Program is a by-product of the net trend calculation from the in-sample forecast based on most recent five years of experience. The program generates the following outputs for each mail category:

- 1) In-sample forecast errors for each quarter over the past five years (1994 to 1999).
- 2) SPLY differences of the forecast errors for each quarter for the past five year period, where SPLY refers to "same period last year".
- 3) 4-quarter averages of the SPLY differences.
- 4) The five-year mechanical net trend and the net trend used in the forecast.

1 **1. Forecast Errors by Quarter**

2 The top panel of the forecast error analysis output labeled "Forecast Errors"
3 contains the logarithms of the forecast errors from the in-sample projection for the past five
4 years by quarter. In a simple example with only price and income projection factors, these
5 forecast errors would be computed as follows:

6 (18) Forecast error_t = $\ln(Q_t) - \ln(Q_{pt})$

7 where Q_{pt} is the projected volume for quarter t and Q_t is actual volume for quarter t.

8 **2. SPLY Differences in Forecast Errors**

9 The second panel of the forecast error analysis output is the "SPLY Differences of
10 Forecast Errors." This panel shows the difference between the in-sample forecast error
11 for a quarter and the forecast error for the same quarter one year earlier. These SPLY
12 differences are derived directly from the panel of forecast errors. For example, Appendix
13 Table 3 shows that in the fall of 1996 (1996Q1), the SPLY difference of forecast errors of
14 single-piece letters is 0.033491. This is equal to the difference between the forecast error
15 in 1996Q1 (0.021816) and the forecast error in 1995Q1 (-0.011676).

16 It is important to note that the SPLY differences in forecast errors can be interpreted
17 as rates of growth in forecast errors when discussing in-sample forecast errors. This is due
18 to the fact that forecast errors are expressed as logarithms and that the difference of
19 logarithms is equivalent to a rate of growth.

3. Four-Quarter Average of SPLY Differences

In the third panel, the column labeled "Four-Quarter Averages of SPLY differences" lists the annual average of SPLY differences from the table above. The mean of all 4-quarter averages is also given.

4. Five-Year Mechanical Net Trend

The five-year mechanical net trend projection factor is calculated by taking the fifth root of the ratio of actual to predicted volume in the base period, using a Base Year starting five years ago in the forecast program.

B. Interpretation of Forecast Error Analysis Program Results

In this section, use of the Forecast Error Analysis Program in estimating net trends for the forecast to the Test Year is discussed.

A major consideration in examining the SPLY differences in forecast errors (changes in forecast errors from Same Period Last Year) in the output of the Forecast Error Analysis Program, is to see if they are relatively constant, which would indicate a smooth operation of a consistent net trend over the five year period. For example, smooth operation of a net trend increasing by one percent per year will mean that the difference between the forecast error in any given quarter and the error in the quarter exactly one year earlier will always be a constant one percent (constant SPLY difference of 0.01).

Smooth operation of the net trend could give a presumption of a systematic net trend process showing no sign of changing. This outcome would favor the estimate that the five-year calculated net trend might reasonably be expected to continue into the future. On the

1 other hand, if a very erratic pattern is found, there is a possibility that the calculated five
2 year net trend may be just a result of accidental or random variation in the first or last year.
3 In this case, the net trend does not truly represent trend factors that continue over time.
4 In the absence of strong non-econometric evidence indicating otherwise, a better estimate
5 for the future, than the five-year net trend calculation, may well be a zero net trend
6 (annualized net trend of 1.00), since in this case no truly systematic trend is indicated.

7 As another possibility, different definite regimes may be identifiable. For instance, if
8 the forecast errors continually decrease during the first part of the five year period
9 (negative SPLY differences) and continually increase (positive SPLY differences) in the last
10 part of the period, absent non-econometric evidence to the contrary, it is reasonable to use
11 the recent period of positive SPLY differences as the best indication of the net trend for the
12 forecast period. In some cases, where non-econometric considerations suggest that
13 conditions in the future will be markedly different from those in the past, a judgmental
14 choice different from any past numbers is warranted.

15 As further detail, the following three cases may be considered:

- 16 1) Cases where five-year net trend is smooth.
17
18 2) Cases where the five-year net trend is distorted by random shocks.
19
20 3) Cases where the trends due to non-econometric factors change over the five year
21 period.

22 1. Smooth Net Trend

23 Smooth changes in forecast errors imply that the change or difference in forecast error
24 from one year to the next will tend to be constant. In the example just given, the difference

1 between the forecast error in any particular year and the error in the previous year will
2 always be one percent. The constant change or difference in forecast error can be seen,
3 in fact, to be equal to the net trend.

4 Exact results of this kind can seldom, if ever, be expected. The question becomes
5 whether the pattern is reasonably smooth. Even in the case where quite smooth results
6 are obtained for all five years, modifications for the forecast period are justified if indicated
7 by non-econometric information.

8 **2. Random Shocks**

9 The five-year net trend is computed using the first and last years out of the data from
10 the five year period. It is possible that temporary shocks influence the data in these
11 periods and, therefore, the five-year net trend does not generate a good representation of
12 systematic influence. Situations that may occur are illustrated by three hypothetical
13 examples:

14 **Example 1: Random shock in year one forecast errors**

15 Assume that some random event caused residuals in the initial period to be negative
16 but that there is no real sustained change which occurred over the whole period. In this
17 case, the five-year net trend will be positive, but the SPLY averages will be about zero after
18 the first year. If annual SPLY averages after the initial year are significantly different than
19 the five-year net trend, the five-year net trend should probably be adjusted.

20

21

1 **Example 2: Random shocks in year five residuals**

2 Assume that some random event in the final net trend period causes the residual to be
3 positive but there had been no sustained positive trend prior to the final period. In this
4 case the five-year net trend will be positive but the SPLY differences prior to the final year
5 will be around zero. Since the final net trend year is also the base year for projections, a
6 negative net trend may actually be appropriate for a case in which the factors which
7 caused the positive base period forecast errors are not expected to continue. In this
8 situation, knowledge of the influences which cause changes in mail volumes is brought into
9 play.

10 **Example 3: Random shocks in forecast errors between year one and year five**

11 Assume that some random event occurs between the periods used to compute the net
12 trend. If this is a temporary random shock that reverses before the final net trend period,
13 the five-year net trend will correctly represent sustained growth in volume due to
14 reconstructive influences. The SPLY changes will reflect the shock, but the average SPLY
15 differences over the whole net trend period should be similar to the five-year net trend.

16 **3. Changes in the Net Trend**

17 The five-year net trend is computed based on a five year time period. If the underlying
18 net trend is based on a sustained influence and random shocks are not observed, the five-
19 year net trend will be a good indicator of volume growth due to influences not measured
20 econometrically. On the other hand, if recent events have changed the influence of non-

1 econometric forces, the five-year net trend may not represent the best forecast of future
2 volume.

3 **C. Forecast Error Analysis Output**

4 The remainder of this Appendix presents the forecast error analysis output for each
5 subclass, including the entries that have been described. In most cases, it was determined
6 that the forecast errors did not display a sufficiently clear pattern to justify inclusion of a net
7 trend factor in the volume forecasts. Five-year mechanical net trends were used in the
8 forecasts of First-Class single-piece private cards, First-Class workshared cards, Standard
9 A Nonprofit mail, Standard A Nonprofit ECR mail, Inter-BMC parcel post, Intra-BMC parcel
10 post, and DBMC parcel post.

FORECAST ERROR ANALYSIS **Single-Piece First-Class Letters**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.011676	-0.024172	-0.015711	-0.010512
1996	0.021816	0.005927	-0.016178	0.004065
1997	0.001399	0.008962	0.007766	0.000150
1998	-0.001697	-0.007744	0.001828	-0.002054
1999	-0.017195	-0.006102	0.017661	-0.005745

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.033491	0.030099	-0.000467	0.014577
1997	-0.020416	0.003035	0.023944	-0.003915
1998	-0.003097	-0.016706	-0.005938	-0.002205
1999	-0.015497	0.001642	0.015832	-0.003691

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.019425
1996Q2	1997Q1	0.005948
1996Q3	1997Q2	-0.000818
1996Q4	1997Q3	0.005285
1997Q1	1997Q4	0.000662
1997Q2	1998Q1	0.004992
1997Q3	1998Q2	0.000056
1997Q4	1998Q3	-0.007414
1998Q1	1998Q4	-0.006986
1998Q2	1999Q1	-0.010086
1998Q3	1999Q2	-0.005499
1998Q4	1999Q3	-0.000057
1999Q1	1999Q4	-0.000429

Mean of the 4 Quarter Averages: 0.000391

Five Year Mechanical Net Trend

1994q4 to 1999q4: 0.997841

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS **Workshared First-Class Letters**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.007802	0.027046	0.007680	0.008123
1996	0.014398	0.003263	0.010825	0.004719
1997	0.002755	-0.003535	0.008798	-0.006035
1998	-0.011424	-0.008752	-0.005774	0.001703
1999	0.017728	0.014523	-0.001378	-0.009611

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.006596	-0.023783	0.003145	-0.003404
1997	-0.011643	-0.006798	-0.002027	-0.010755
1998	-0.014179	-0.005217	-0.014572	0.007738
1999	0.029152	0.023275	0.004396	-0.011313

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.004361
1996Q2	1997Q1	-0.008921
1996Q3	1997Q2	-0.004675
1996Q4	1997Q3	-0.005968
1997Q1	1997Q4	-0.007806
1997Q2	1998Q1	-0.008440
1997Q3	1998Q2	-0.008045
1997Q4	1998Q3	-0.011181
1998Q1	1998Q4	-0.006558
1998Q2	1999Q1	0.004275
1998Q3	1999Q2	0.011398
1998Q4	1999Q3	0.016140
1999Q1	1999Q4	0.011377

Mean of the 4 Quarter Averages: -0.001751

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.003736

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Stamped Cards

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.006975	0.049774	-0.005319	0.086851
1996	0.153222	-0.025775	-0.041070	0.182479
1997	0.312445	0.292601	-0.170577	-0.318423
1998	-0.037956	-0.331742	0.089484	0.092725
1999	0.053477	-0.009585	0.263985	0.191574

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.146247	-0.075549	-0.035751	0.095628
1997	0.159223	0.318376	-0.129506	-0.500902
1998	-0.350401	-0.624343	0.260061	0.411147
1999	0.091433	0.322157	0.174501	0.098850

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.032644
1996Q2	1997Q1	0.035888
1996Q3	1997Q2	0.134369
1996Q4	1997Q3	0.110930
1997Q1	1997Q4	-0.038202
1997Q2	1998Q1	-0.165608
1997Q3	1998Q2	-0.401288
1997Q4	1998Q3	-0.303896
1998Q1	1998Q4	-0.075884
1998Q2	1999Q1	0.034574
1998Q3	1999Q2	0.271200
1998Q4	1999Q3	0.249810
1999Q1	1999Q4	0.171735

Mean of the 4 Quarter Averages: 0.004329

Five Year Mechanical Net Trend
1994q4 to 1999q4: 0.969274

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS **Private First-Class Cards**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.002221	0.025936	0.003823	-0.008489
1996	-0.009028	0.000950	-0.021334	0.017918
1997	0.036046	-0.004661	-0.012156	-0.037118
1998	-0.004616	0.049266	0.031644	0.051182
1999	-0.024405	0.013305	-0.057997	-0.046071

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.006807	-0.024985	-0.025157	0.026407
1997	0.045074	-0.005611	0.009178	-0.055036
1998	-0.040662	0.053927	0.043801	0.088300
1999	-0.019789	-0.035961	-0.089642	-0.097253

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.007636
1996Q2	1997Q1	0.005335
1996Q3	1997Q2	0.010178
1996Q4	1997Q3	0.018762
1997Q1	1997Q4	-0.001599
1997Q2	1998Q1	-0.023033
1997Q3	1998Q2	-0.008148
1997Q4	1998Q3	0.000507
1998Q1	1998Q4	0.036341
1998Q2	1999Q1	0.041560
1998Q3	1999Q2	0.019088
1998Q4	1999Q3	-0.014273
1999Q1	1999Q4	-0.060661

Mean of the 4 Quarter Averages: 0.001263

Five Year Mechanical Net Trend
1994q4 to 1999q4:

0.993833

FORECAST ERROR ANALYSIS

Single-Piece First-Class Cards

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.145423	0.005212	0.087369	0.000636
1996	0.083142	-0.069871	0.038795	0.019914
1997	0.076484	-0.091696	0.017166	-0.078535
1998	0.042108	-0.079276	0.008549	-0.031905
1999	-0.072306	-0.154128	-0.082960	-0.124831

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.062282	-0.075083	-0.048573	0.019278
1997	-0.006658	-0.021825	-0.021629	-0.098449
1998	-0.034375	0.012420	-0.008617	0.046630
1999	-0.114415	-0.074853	-0.091509	-0.092926

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.041665
1996Q2	1997Q1	-0.027759
1996Q3	1997Q2	-0.014445
1996Q4	1997Q3	-0.007708
1997Q1	1997Q4	-0.037140
1997Q2	1998Q1	-0.044070
1997Q3	1998Q2	-0.035508
1997Q4	1998Q3	-0.032255
1998Q1	1998Q4	0.004014
1998Q2	1999Q1	-0.015995
1998Q3	1999Q2	-0.037814
1998Q4	1999Q3	-0.058536
1999Q1	1999Q4	-0.093425

Mean of the 4 Quarter Averages: -0.034024

Five Year Mechanical Net Trend
1994q4 to 1999q4:

0.963773

Net Trend used in Forecast

0.963773

FORECAST ERROR ANALYSIS

Workshared First-Class Cards

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.194919	0.070161	-0.101458	-0.016890
1996	-0.125195	0.091281	-0.095906	0.014691
1997	-0.015071	0.131010	-0.048499	0.016852
1998	-0.060453	0.229725	0.053645	0.147842
1999	0.024820	0.223283	-0.031809	0.044081

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.069724	0.021120	0.005552	0.031581
1997	0.110123	0.039729	0.047407	0.002161
1998	-0.045382	0.098715	0.102144	0.130990
1999	0.085273	-0.006442	-0.085454	-0.103761

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.031994
1996Q2	1997Q1	0.042094
1996Q3	1997Q2	0.046746
1996Q4	1997Q3	0.057210
1997Q1	1997Q4	0.049855
1997Q2	1998Q1	0.010979
1997Q3	1998Q2	0.025725
1997Q4	1998Q3	0.039410
1998Q1	1998Q4	0.071617
1998Q2	1999Q1	0.104281
1998Q3	1999Q2	0.077991
1998Q4	1999Q3	0.031092
1999Q1	1999Q4	-0.027596

Mean of the 4 Quarter Averages: 0.043184

Five Year Mechanical Net Trend
1994q4 to 1999q4: 1.020598

Net Trend used in Forecast 1.020598

FORECAST ERROR ANALYSIS **Periodical Within County Mail**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.057117	-0.112436	-0.007403	0.128428
1996	-0.070697	-0.071915	-0.062577	0.041329
1997	0.066767	0.012978	-0.023468	0.017510
1998	0.016802	-0.005282	0.035686	-0.039941
1999	0.012370	0.034733	-0.059293	0.018681

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.013580	0.040522	-0.055174	-0.087099
1997	0.137464	0.084892	0.039109	-0.023819
1998	-0.049965	-0.018260	0.059154	-0.057451
1999	-0.004432	0.040016	-0.094979	0.058622

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.028833
1996Q2	1997Q1	0.008928
1996Q3	1997Q2	0.020021
1996Q4	1997Q3	0.043592
1997Q1	1997Q4	0.059412
1997Q2	1998Q1	0.012554
1997Q3	1998Q2	-0.013234
1997Q4	1998Q3	-0.008223
1998Q1	1998Q4	-0.016631
1998Q2	1999Q1	-0.005247
1998Q3	1999Q2	0.009322
1998Q4	1999Q3	-0.029211
1999Q1	1999Q4	-0.000193

Mean of the 4 Quarter Averages: 0.004020

Five Year Mechanical Net Trend
1994q4 to 1999q4: 0.997514

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS

Periodical Nonprofit Mail

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.042073	-0.012640	0.014914	-0.036682
1996	0.028074	0.022695	-0.016505	-0.013892
1997	0.015963	0.027565	-0.057384	-0.016069
1998	0.020302	-0.029752	0.022560	-0.026031
1999	-0.010643	0.017022	-0.032503	0.014849

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.013999	0.035335	-0.031419	0.022790
1997	-0.012110	0.004870	-0.040879	-0.002177
1998	0.004338	-0.057317	0.079943	-0.009962
1999	-0.030945	0.046774	-0.055063	0.040880

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.003176
1996Q2	1997Q1	0.003649
1996Q3	1997Q2	-0.003967
1996Q4	1997Q3	-0.006332
1997Q1	1997Q4	-0.012574
1997Q2	1998Q1	-0.008462
1997Q3	1998Q2	-0.024009
1997Q4	1998Q3	0.006197
1998Q1	1998Q4	0.004251
1998Q2	1999Q1	-0.004570
1998Q3	1999Q2	0.021453
1998Q4	1999Q3	-0.012299
1999Q1	1999Q4	0.000412

Mean of the 4 Quarter Averages: -0.002544

Five Year Mechanical Net Trend
1994q4 to 1999q4: 0.997330

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS

Periodical Classroom Mail

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.166565	-0.017311	-0.120751	0.054702
1996	0.067828	-0.095244	0.013710	-0.183350
1997	0.116488	0.144821	-0.056214	0.098544
1998	-0.027441	0.294571	0.025827	-0.080365
1999	0.082309	0.271879	-0.105761	0.023610

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.234393	-0.077933	0.134461	-0.238053
1997	0.048660	0.240065	-0.069924	0.281894
1998	-0.143929	0.149750	0.082042	-0.178908
1999	0.109750	-0.022692	-0.131589	0.103974

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.013217
1996Q2	1997Q1	-0.033216
1996Q3	1997Q2	0.046283
1996Q4	1997Q3	-0.004813
1997Q1	1997Q4	0.125174
1997Q2	1998Q1	0.077026
1997Q3	1998Q2	0.054448
1997Q4	1998Q3	0.092439
1998Q1	1998Q4	-0.022762
1998Q2	1999Q1	0.040658
1998Q3	1999Q2	-0.002452
1998Q4	1999Q3	-0.055860
1999Q1	1999Q4	0.014861

Mean of the 4 Quarter Averages: 0.026539

Five Year Mechanical Net Trend
1994q4 to 1999q4:

0.989628

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Periodical Regular Rate

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.000709	-0.067025	0.065757	0.005309
1996	-0.015767	0.032148	-0.042305	0.001297
1997	0.034644	0.026376	-0.010003	0.009005
1998	-0.005812	0.011676	-0.014253	-0.003797
1999	-0.000572	0.003756	-0.000813	-0.000636

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.015058	0.099173	-0.108062	-0.004012
1997	0.050410	-0.005772	0.032303	0.007708
1998	-0.040455	-0.014700	-0.004251	-0.012802
1999	0.005240	-0.007920	0.013441	0.003161

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.006990
1996Q2	1997Q1	0.009377
1996Q3	1997Q2	-0.016859
1996Q4	1997Q3	0.018232
1997Q1	1997Q4	0.021162
1997Q2	1998Q1	-0.001554
1997Q3	1998Q2	-0.003786
1997Q4	1998Q3	-0.012924
1998Q1	1998Q4	-0.018052
1998Q2	1999Q1	-0.006628
1998Q3	1999Q2	-0.004933
1998Q4	1999Q3	-0.000511
1999Q1	1999Q4	0.003480

Mean of the 4 Quarter Averages: -0.001537

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.002487

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Standard Regular Rate

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.024611	0.024527	0.015647	-0.000699
1996	0.027654	-0.003175	-0.020176	-0.009429
1997	-0.003146	0.004124	0.005984	-0.001138
1998	-0.012262	-0.005594	0.013564	0.019761
1999	-0.000298	-0.013748	-0.000728	-0.000090

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.003043	-0.027702	-0.035823	-0.008730
1997	-0.030800	0.007299	0.026160	0.008291
1998	-0.009115	-0.009718	0.007580	-0.020899
1999	0.011964	-0.008154	-0.014292	-0.019852

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.017303
1996Q2	1997Q1	-0.025764
1996Q3	1997Q2	-0.017013
1996Q4	1997Q3	-0.001518
1997Q1	1997Q4	0.002737
1997Q2	1998Q1	0.008159
1997Q3	1998Q2	0.003904
1997Q4	1998Q3	-0.000740
1998Q1	1998Q4	0.002412
1998Q2	1999Q1	0.007681
1998Q3	1999Q2	0.008072
1998Q4	1999Q3	0.002604
1999Q1	1999Q4	-0.007584

Mean of the 4 Quarter Averages: -0.002642

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.002232

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS **Standard Enhanced Carrier Route**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.001371	-0.025292	-0.019668	-0.001250
1996	-0.012413	-0.010505	-0.008364	-0.019050
1997	0.004453	0.012742	-0.003423	-0.007021
1998	-0.015407	-0.001608	0.009992	0.031047
1999	-0.013579	-0.003641	-0.010789	0.016515

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.011042	0.014787	0.011304	-0.017800
1997	0.016866	0.023247	0.004941	0.012030
1998	-0.019860	-0.014350	0.013415	0.038067
1999	0.001828	-0.002033	-0.020781	-0.014532

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.000688
1996Q2	1997Q1	0.006289
1996Q3	1997Q2	0.008404
1996Q4	1997Q3	0.006813
1997Q1	1997Q4	0.014271
1997Q2	1998Q1	0.005089
1997Q3	1998Q2	-0.004310
1997Q4	1998Q3	-0.002191
1998Q1	1998Q4	0.004318
1998Q2	1999Q1	0.009740
1998Q3	1999Q2	0.012819
1998Q4	1999Q3	0.004270
1999Q1	1999Q4	-0.008880

Mean of the 4 Quarter Averages: 0.004304

Five Year Mechanical Net Trend

1994q4 to 1999q4: 0.997162

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Standard Bulk Nonprofit

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.012135	0.029881	0.016816	0.010172
1996	-0.013895	-0.013043	-0.017042	0.007459
1997	0.009177	-0.017182	0.006496	-0.010954
1998	-0.026709	0.004033	-0.012218	-0.005741
1999	0.031691	-0.004332	0.005252	-0.007849

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.026030	-0.042924	-0.033857	-0.002713
1997	0.023072	-0.004140	0.023538	-0.018413
1998	-0.035887	0.021215	-0.018714	0.005212
1999	0.058400	-0.008365	0.017470	-0.002108

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.026381
1996Q2	1997Q1	-0.014105
1996Q3	1997Q2	-0.004409
1996Q4	1997Q3	0.009939
1997Q1	1997Q4	0.006014
1997Q2	1998Q1	-0.008725
1997Q3	1998Q2	-0.002387
1997Q4	1998Q3	-0.012950
1998Q1	1998Q4	-0.007043
1998Q2	1999Q1	0.016528
1998Q3	1999Q2	0.009133
1998Q4	1999Q3	0.018179
1999Q1	1999Q4	0.016349

Mean of the 4 Quarter Averages: 0.000011

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.001718

FORECAST ERROR ANALYSIS

Standard Nonprofit

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.028491	0.037319	0.007954	-0.009285
1996	-0.039245	-0.015664	0.014363	-0.009714
1997	-0.045284	0.005335	0.046863	0.011632
1998	-0.079787	0.031469	0.027555	0.007453
1999	0.007678	0.036917	0.058883	0.019805

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.010754	-0.052983	0.006409	-0.000429
1997	-0.006040	0.020998	0.032500	0.021347
1998	-0.034503	0.026134	-0.019307	-0.004179
1999	0.087464	0.005448	0.031328	0.012351

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.014439
1996Q2	1997Q1	-0.013261
1996Q3	1997Q2	0.005235
1996Q4	1997Q3	0.011757
1997Q1	1997Q4	0.017201
1997Q2	1998Q1	0.010085
1997Q3	1998Q2	0.011370
1997Q4	1998Q3	-0.001582
1998Q1	1998Q4	-0.007964
1998Q2	1999Q1	0.022528
1998Q3	1999Q2	0.017357
1998Q4	1999Q3	0.030015
1999Q1	1999Q4	0.034148

Mean of the 4 Quarter Averages: 0.009419

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.010469

Net Trend used in Forecast

1.010469

FORECAST ERROR ANALYSIS

Standard Nonprofit ECR

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.182725	0.010119	0.092445	0.118931
1996	0.113056	0.003027	-0.081578	0.109753
1997	0.218349	-0.142465	-0.099054	-0.048404
1998	-0.145502	-0.156221	-0.143140	-0.121668
1999	0.151545	-0.200184	-0.162987	-0.072237

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.069669	-0.007092	-0.174023	-0.009178
1997	0.105292	-0.145492	-0.017476	-0.158157
1998	-0.363850	-0.013756	-0.044087	-0.073264
1999	0.297046	-0.043963	-0.019847	0.049431

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.064990
1996Q2	1997Q1	-0.021250
1996Q3	1997Q2	-0.055850
1996Q4	1997Q3	-0.016713
1997Q1	1997Q4	-0.053958
1997Q2	1998Q1	-0.171244
1997Q3	1998Q2	-0.138310
1997Q4	1998Q3	-0.144963
1998Q1	1998Q4	-0.123739
1998Q2	1999Q1	0.041485
1998Q3	1999Q2	0.033933
1998Q4	1999Q3	0.039993
1999Q1	1999Q4	0.070667

Mean of the 4 Quarter Averages: -0.046534

Five Year Mechanical Net Trend

1994q4 to 1999q4:

0.970843

Net Trend used in Forecast

0.970843

FORECAST ERROR ANALYSIS **Standard Parcel Post**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.041035	0.069438	0.039312	0.026908
1996	0.044134	0.030068	0.025151	0.048447
1997	0.039958	0.048612	-0.039276	0.000000
1998	0.022778	-0.022778	-0.024324	0.012826
1999	0.034402	-0.014351	-0.071750	-0.057826

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.085169	-0.039371	-0.014162	0.021539
1997	-0.004176	0.018545	-0.064426	-0.048447
1998	-0.017181	-0.071390	0.014951	0.012826
1999	0.011624	0.008426	-0.047426	-0.070653

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.013294
1996Q2	1997Q1	-0.009042
1996Q3	1997Q2	0.005437
1996Q4	1997Q3	-0.007130
1997Q1	1997Q4	-0.024626
1997Q2	1998Q1	-0.027877
1997Q3	1998Q2	-0.050361
1997Q4	1998Q3	-0.030517
1998Q1	1998Q4	-0.015198
1998Q2	1999Q1	-0.007997
1998Q3	1999Q2	0.011957
1998Q4	1999Q3	-0.003637
1999Q1	1999Q4	-0.024507

Mean of the 4 Quarter Averages: -0.013093

Five Year Mechanical Net Trend

1994q4 to 1999q4:

1.002043

FORECAST ERROR ANALYSIS **Non-Destination Entry Parcel Post**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.227215	0.293883	0.169924	0.159867
1996	0.020420	0.077887	-0.044877	0.075952
1997	-0.157276	-0.008189	-0.147653	0.018023
1998	-0.224132	-0.102586	-0.207544	-0.159576
1999	-0.317275	-0.088518	-0.347571	-0.307573

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.206795	-0.215996	-0.214801	-0.083915
1997	-0.177695	-0.086076	-0.102776	-0.057929
1998	-0.066856	-0.094397	-0.059891	-0.177599
1999	-0.093143	0.014067	-0.140027	-0.147997

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.180377
1996Q2	1997Q1	-0.173102
1996Q3	1997Q2	-0.140622
1996Q4	1997Q3	-0.112615
1997Q1	1997Q4	-0.106119
1997Q2	1998Q1	-0.078409
1997Q3	1998Q2	-0.080490
1997Q4	1998Q3	-0.069768
1998Q1	1998Q4	-0.099686
1998Q2	1999Q1	-0.106258
1998Q3	1999Q2	-0.079141
1998Q4	1999Q3	-0.099176
1999Q1	1999Q4	-0.091775

Mean of the 4 Quarter Averages: -0.109041

Five Year Mechanical Net Trend

1994q4 to 1999q4:

0.888596

Net Trend used in Forecast

0.888596

FORECAST ERROR ANALYSIS **Destination Entry Parcel Post**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.242823	-0.086463	-0.031842	-0.046176
1996	0.084335	0.022311	0.093529	0.054900
1997	0.176007	0.109156	0.050916	0.012919
1998	0.181932	0.051289	0.104894	0.136674
1999	0.237200	0.048743	0.075063	0.076836

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.327158	0.108774	0.125371	0.101076
1997	0.091672	0.086845	-0.042614	-0.041981
1998	0.005925	-0.057867	0.053978	0.123755
1999	0.055268	-0.002546	-0.029830	-0.059838

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.165595
1996Q2	1997Q1	0.106723
1996Q3	1997Q2	0.101241
1996Q4	1997Q3	0.059245
1997Q1	1997Q4	0.023481
1997Q2	1998Q1	0.002044
1997Q3	1998Q2	-0.034134
1997Q4	1998Q3	-0.009986
1998Q1	1998Q4	0.031448
1998Q2	1999Q1	0.043783
1998Q3	1999Q2	0.057614
1998Q4	1999Q3	0.036662
1999Q1	1999Q4	-0.009237

Mean of the 4 Quarter Averages: 0.044191

Five Year Mechanical Net Trend
1994q4 to 1999q4: 1.089687

Net Trend used in Forecast 1.089687

FORECAST ERROR ANALYSIS **Standard Bound Printed Matter**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.099877	-0.063049	0.078451	0.019351
1996	0.062735	0.055219	0.045630	0.060788
1997	0.193987	-0.102277	-0.002809	-0.018134
1998	0.034931	0.126608	-0.052832	0.028395
1999	-0.124342	0.058278	-0.043364	-0.010582

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.162612	0.118267	-0.032821	0.041438
1997	0.131253	-0.157496	-0.048438	-0.078922
1998	-0.159057	0.228885	-0.050024	0.046529
1999	-0.159273	-0.068330	0.009468	-0.038977

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.072374
1996Q2	1997Q1	0.064534
1996Q3	1997Q2	-0.004407
1996Q4	1997Q3	-0.008311
1997Q1	1997Q4	-0.038401
1997Q2	1998Q1	-0.110978
1997Q3	1998Q2	-0.014383
1997Q4	1998Q3	-0.014779
1998Q1	1998Q4	0.016584
1998Q2	1999Q1	0.016530
1998Q3	1999Q2	-0.057774
1998Q4	1999Q3	-0.042901
1999Q1	1999Q4	-0.064278

Mean of the 4 Quarter Averages: -0.014322

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.001117

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS **Standard Special Rate**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.044816	0.006850	0.155181	0.134981
1996	-0.006470	-0.021853	-0.013448	-0.001425
1997	0.021345	-0.034236	0.085454	-0.000000
1998	-0.077759	-0.161515	-0.048119	0.038584
1999	-0.095139	0.093431	-0.027900	-0.045040

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.051285	-0.028703	-0.168628	-0.136405
1997	0.027815	-0.012382	0.098902	0.001425
1998	-0.099105	-0.127280	-0.133573	0.038584
1999	-0.017380	0.254946	0.020219	-0.083624

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.096256
1996Q2	1997Q1	-0.076480
1996Q3	1997Q2	-0.072400
1996Q4	1997Q3	-0.005518
1997Q1	1997Q4	0.028940
1997Q2	1998Q1	-0.002790
1997Q3	1998Q2	-0.031514
1997Q4	1998Q3	-0.089633
1998Q1	1998Q4	-0.080343
1998Q2	1999Q1	-0.059912
1998Q3	1999Q2	0.035644
1998Q4	1999Q3	0.074092
1999Q1	1999Q4	0.043541

Mean of the 4 Quarter Averages: -0.025587

Five Year Mechanical Net Trend
1994q4 to 1999q4:

0.998213

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Standard Library Rate

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.090990	-0.077991	-0.001095	-0.153064
1996	0.027385	0.112554	0.306549	0.015592
1997	-0.047000	-0.056076	0.001825	-0.000000
1998	-0.085895	-0.089128	-0.006336	0.095713
1999	-0.106894	-0.002414	0.067377	0.027040

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.118375	0.190545	0.307645	0.168656
1997	-0.074384	-0.168630	-0.304725	-0.015592
1998	-0.038896	-0.033052	-0.008160	0.095713
1999	-0.020998	0.086714	0.073712	-0.068673

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.196305
1996Q2	1997Q1	0.148115
1996Q3	1997Q2	0.058322
1996Q4	1997Q3	-0.094771
1997Q1	1997Q4	-0.140833
1997Q2	1998Q1	-0.131961
1997Q3	1998Q2	-0.098066
1997Q4	1998Q3	-0.023925
1998Q1	1998Q4	0.003901
1998Q2	1999Q1	0.008376
1998Q3	1999Q2	0.038317
1998Q4	1999Q3	0.058785
1999Q1	1999Q4	0.017689

Mean of the 4 Quarter Averages: 0.003097

Five Year Mechanical Net Trend
1994q4 to 1999q4: 0.995102

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS

Mailgrams

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.090910	-0.117032	0.106137	-0.394888
1996	-0.229946	0.425659	0.126547	0.008197
1997	0.328253	0.192578	-0.468914	0.092257
1998	0.038628	-0.124371	0.014562	0.206253
1999	0.125383	-0.264293	0.155866	0.134846

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.139036	0.542691	0.020410	0.403085
1997	0.558199	-0.233080	-0.595462	0.084061
1998	-0.289626	-0.316949	0.483476	0.113996
1999	0.086756	-0.139923	0.141305	-0.071407

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.206787
1996Q2	1997Q1	0.381096
1996Q3	1997Q2	0.187154
1996Q4	1997Q3	0.033186
1997Q1	1997Q4	-0.046571
1997Q2	1998Q1	-0.258527
1997Q3	1998Q2	-0.279494
1997Q4	1998Q3	-0.009760
1998Q1	1998Q4	-0.002276
1998Q2	1999Q1	0.091820
1998Q3	1999Q2	0.136076
1998Q4	1999Q3	0.050533
1999Q1	1999Q4	0.004183

Mean of the 4 Quarter Averages: 0.038016

Five Year Mechanical Net Trend
1994q4 to 1999q4: 1.103720

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS

Postal Penalty Mail

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.142002	-0.111729	-0.050312	-0.255733
1996	-0.043456	-0.086916	-0.158836	-0.030344
1997	-0.086464	0.187627	-0.006857	0.028620
1998	-0.029475	0.015504	0.034937	0.067123
1999	0.066084	-0.063472	0.035250	0.115385

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.185458	0.024813	-0.108524	0.225389
1997	-0.043008	0.274542	0.151979	0.058964
1998	0.056989	-0.172123	0.041794	0.038503
1999	0.095559	-0.078976	0.000314	0.048262

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.010945
1996Q2	1997Q1	0.024667
1996Q3	1997Q2	0.087100
1996Q4	1997Q3	0.152226
1997Q1	1997Q4	0.110619
1997Q2	1998Q1	0.135619
1997Q3	1998Q2	0.023952
1997Q4	1998Q3	-0.003594
1998Q1	1998Q4	-0.008709
1998Q2	1999Q1	0.000933
1998Q3	1999Q2	0.024220
1998Q4	1999Q3	0.013850
1999Q1	1999Q4	0.016290

Mean of the 4 Quarter Averages: 0.043556

Five Year Mechanical Net Trend
1994q4 to 1999q4: 1.018178

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS **Free-for-the-Blind-and-Handicapped Mail**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.022855	0.393234	-0.227464	-0.005462
1996	0.175002	-0.332982	-0.132742	0.120786
1997	-0.062433	-0.004588	-0.009044	0.110574
1998	-0.007935	-0.019100	-0.097326	-0.013970
1999	-0.152351	0.107282	-0.125380	-0.101273

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.152146	-0.726216	0.094722	0.126248
1997	-0.237435	0.328394	0.123698	-0.010212
1998	0.054498	-0.014512	-0.088282	-0.124544
1999	-0.144416	0.126382	-0.028054	-0.087303

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.088275
1996Q2	1997Q1	-0.185671
1996Q3	1997Q2	0.077982
1996Q4	1997Q3	0.085226
1997Q1	1997Q4	0.051111
1997Q2	1998Q1	0.124095
1997Q3	1998Q2	0.038368
1997Q4	1998Q3	-0.014627
1998Q1	1998Q4	-0.043210
1998Q2	1999Q1	-0.092938
1998Q3	1999Q2	-0.057715
1998Q4	1999Q3	-0.042658
1999Q1	1999Q4	-0.033348

Mean of the 4 Quarter Averages: -0.013974

Five Year Mechanical Net Trend

1994q4 to 1999q4: 0.967262

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS**Registered Mail**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.084683	-0.032623	0.038991	-0.012722
1996	-0.217527	0.067283	0.024257	0.089541
1997	0.037332	-0.040986	-0.063250	-0.048922
1998	-0.015762	-0.052165	0.084709	-0.076090
1999	0.044845	0.059814	-0.032458	-0.033501

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.302210	0.099906	-0.014734	0.102263
1997	0.254859	-0.108269	-0.087507	-0.138462
1998	-0.053094	-0.011179	0.147960	-0.027169
1999	0.060607	0.111979	-0.117168	0.042589

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.028694
1996Q2	1997Q1	0.110574
1996Q3	1997Q2	0.058530
1996Q4	1997Q3	0.040336
1997Q1	1997Q4	-0.019845
1997Q2	1998Q1	-0.096833
1997Q3	1998Q2	-0.072561
1997Q4	1998Q3	-0.013694
1998Q1	1998Q4	0.014129
1998Q2	1999Q1	0.042555
1998Q3	1999Q2	0.073344
1998Q4	1999Q3	0.007062
1999Q1	1999Q4	0.024502

Mean of the 4 Quarter Averages: 0.010724

Five Year Mechanical Net Trend

1994q4 to 1999q4:

0.999475

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS**Insured Mail**

From Forecast Using Base Year Ending 1994Q4

R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.011822	-0.089637	-0.126208	-0.063389
1996	-0.006271	-0.041177	-0.065267	0.001532
1997	0.151966	-0.006179	0.095782	0.073187
1998	-0.163553	0.041921	-0.057294	-0.114092
1999	-0.016656	0.113877	0.108853	0.009993

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.018093	0.048460	0.060941	0.064922
1997	0.158236	0.034998	0.161049	0.071655
1998	-0.315518	0.048100	-0.153076	-0.187279
1999	0.146896	0.071956	0.166147	0.124085

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.039057
1996Q2	1997Q1	0.083140
1996Q3	1997Q2	0.079774
1996Q4	1997Q3	0.104801
1997Q1	1997Q4	0.106485
1997Q2	1998Q1	-0.011954
1997Q3	1998Q2	-0.008679
1997Q4	1998Q3	-0.087210
1998Q1	1998Q4	-0.151943
1998Q2	1999Q1	-0.036340
1998Q3	1999Q2	-0.030376
1998Q4	1999Q3	0.049430
1999Q1	1999Q4	0.127271

Mean of the 4 Quarter Averages: 0.020266

Five Year Mechanical Net Trend

1994q4 to 1999q4:

1.008533

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Certified Mail

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.040152	-0.003030	0.070340	0.090848
1996	-0.045277	0.035502	0.002042	0.092103
1997	0.061585	0.035443	-0.039874	0.059571
1998	-0.006666	-0.046300	0.030984	-0.005993
1999	-0.136034	-0.024485	-0.011501	-0.107110

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.005125	0.038531	-0.068299	0.001255
1997	0.106862	-0.000058	-0.041915	-0.032532
1998	-0.068251	-0.081743	0.070858	-0.065564
1999	-0.129368	0.021815	-0.042486	-0.101117

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.008409
1996Q2	1997Q1	0.019587
1996Q3	1997Q2	0.009940
1996Q4	1997Q3	0.016536
1997Q1	1997Q4	0.008089
1997Q2	1998Q1	-0.035689
1997Q3	1998Q2	-0.056110
1997Q4	1998Q3	-0.027917
1998Q1	1998Q4	-0.036175
1998Q2	1999Q1	-0.051454
1998Q3	1999Q2	-0.025565
1998Q4	1999Q3	-0.053901
1999Q1	1999Q4	-0.062789

Mean of the 4 Quarter Averages: -0.023374

Five Year Mechanical Net Trend
1994q4 to 1999q4: 0.979235

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS

Collect-on-Delivery

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	-0.084397	0.103761	-0.057184	0.013609
1996	-0.052418	0.007441	-0.022389	0.040891
1997	-0.136773	0.012526	-0.018674	-0.025931
1998	-0.038397	-0.021195	-0.051800	-0.132935
1999	0.221682	-0.048101	-0.084386	-0.084636

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.031979	-0.096320	0.034795	0.027283
1997	-0.084355	0.005085	0.003715	-0.066822
1998	0.098375	-0.033721	-0.033126	-0.107004
1999	0.260079	-0.026906	-0.032585	0.048299

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.000566
1996Q2	1997Q1	-0.029649
1996Q3	1997Q2	-0.004298
1996Q4	1997Q3	-0.012068
1997Q1	1997Q4	-0.035594
1997Q2	1998Q1	0.010088
1997Q3	1998Q2	0.000387
1997Q4	1998Q3	-0.008824
1998Q1	1998Q4	-0.018869
1998Q2	1999Q1	0.021557
1998Q3	1999Q2	0.023261
1998Q4	1999Q3	0.023396
1999Q1	1999Q4	0.062222

Mean of the 4 Quarter Averages: 0.002388

Five Year Mechanical Net Trend
1994q4 to 1999q4: 1.007232

Net Trend used in Forecast 1.000000

FORECAST ERROR ANALYSIS**Return Receipts**

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.036792	0.178056	-0.023251	-0.032268
1996	0.018620	0.045803	-0.036290	0.004450
1997	0.086283	0.076770	0.004736	0.027974
1998	-0.024065	-0.013548	0.001279	-0.024414
1999	-0.069120	-0.189887	0.019667	-0.000723

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	-0.018172	-0.132253	-0.013039	0.036718
1997	0.067662	0.030967	0.041026	0.023524
1998	-0.110348	-0.090318	-0.003457	-0.052388
1999	-0.045055	-0.176338	0.018388	0.023691

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	-0.031686
1996Q2	1997Q1	-0.010228
1996Q3	1997Q2	0.030577
1996Q4	1997Q3	0.044093
1997Q1	1997Q4	0.040795
1997Q2	1998Q1	-0.003708
1997Q3	1998Q2	-0.034029
1997Q4	1998Q3	-0.045150
1998Q1	1998Q4	-0.064128
1998Q2	1999Q1	-0.047804
1998Q3	1999Q2	-0.069310
1998Q4	1999Q3	-0.063848
1999Q1	1999Q4	-0.044828

Mean of the 4 Quarter Averages: -0.023020

Five Year Mechanical Net Trend

1994q4 to 1999q4:

0.999584

Net Trend used in Forecast

1.000000

FORECAST ERROR ANALYSIS

Money Orders

From Forecast Using Base Year Ending 1994Q4
R2000-1 Forecast Specifications

Forecast Errors

Calculated as the log of the actual volume minus the log of the forecasted volume

Year	Fall	Winter	Spring	Summer
1995	0.021728	0.053814	-0.008194	-0.018603
1996	0.049985	-0.054791	0.042146	0.167228
1997	-0.048115	-0.038054	0.010767	-0.042574
1998	0.003692	-0.021774	-0.002577	-0.005791
1999	0.037682	-0.020171	0.039187	0.011581

SPLY Differences of Forecast Errors

Year	Fall	Winter	Spring	Summer
1995	NA	NA	NA	NA
1996	0.028257	-0.108605	0.050340	0.185831
1997	-0.098100	0.016737	-0.031378	-0.209802
1998	0.051807	0.016281	-0.013345	0.036783
1999	0.033991	0.001603	0.041764	0.017371

Four Quarter Average of SPLY Differences

Begin	End	4-Qtr Average
1996Q1	1996Q4	0.038956
1996Q2	1997Q1	0.007367
1996Q3	1997Q2	0.038702
1996Q4	1997Q3	0.018273
1997Q1	1997Q4	-0.080636
1997Q2	1998Q1	-0.043159
1997Q3	1998Q2	-0.043273
1997Q4	1998Q3	-0.038765
1998Q1	1998Q4	0.022881
1998Q2	1999Q1	0.018428
1998Q3	1999Q2	0.014758
1998Q4	1999Q3	0.028535
1999Q1	1999Q4	0.023682

Mean of the 4 Quarter Averages: 0.000442

Five Year Mechanical Net Trend
1994q4 to 1999q4:

1.007213

Net Trend used in Forecast

1.000000

Docket No. R2000-1

USPS-T-6

ATTACHMENT A

Quarterly and Government Year Volume Forecasts

R2000-1 Before-Rates Volume Forecast

	2000Q1	2000Q2	2000Q3	2000Q4	2000PFY	2000GFY
FIRST-CLASS MAIL						
First-Class Letters & Flats	22,473.553	23,880.965	22,960.113	28,883.882	98,198.513	98,781.073
-- Single-Piece	12,298.293	13,333.700	12,504.012	15,311.805	53,447.809	53,685.016
-- Workshared	10,175.260	10,547.265	10,456.102	13,572.078	44,750.704	45,096.057
(Nonautomated Presort)	861.116	835.132	779.799	985.304	3,461.351	3,445.205
(Automated)	9,314.143	9,712.134	9,676.303	12,586.773	41,289.353	41,650.851
(Basic Letters)	1,191.891	1,231.083	1,236.540	1,607.630	5,267.144	5,310.540
(Basic Flats)	10.892	11.382	11.358	14.786	48.418	48.854
(3-Digit Letters)	5,071.758	5,308.217	5,301.073	6,923.828	22,604.876	22,816.989
(5-Digit Letters)	2,677.462	2,773.265	2,744.999	3,552.450	11,748.177	11,834.469
(3/5-Digit Flats)	64.783	67.431	66.477	85.242	283.933	286.206
(Carrier-Route Letters)	297.358	320.756	315.856	402.836	1,336.806	1,353.793
First-Class Cards	1,332.366	1,214.723	1,245.268	1,613.761	5,406.118	5,455.330
Stamped Cards	110.055	96.673	101.210	120.186	428.124	431.990
Private Cards	1,222.311	1,118.049	1,144.058	1,493.575	4,977.994	5,023.339
-- Single-Piece Cards	597.647	542.806	551.152	714.221	2,405.826	2,423.236
-- Workshared Cards	624.664	575.243	592.906	779.354	2,572.168	2,600.104
(Nonautomated Presort Card)	126.024	102.095	107.099	129.506	464.722	464.203
(Automated Cards)	498.640	473.149	485.808	649.848	2,107.446	2,135.901
(Basic)	111.611	100.356	116.521	156.212	484.700	492.104
(3-Digit)	212.994	201.624	205.211	270.249	890.079	900.687
(5-Digit)	152.327	144.379	141.836	192.101	630.643	638.205
(Carrier-Route)	21.709	26.789	22.240	31.286	102.024	104.905
TOTAL FIRST-CLASS MAIL	23,805.918	25,095.688	24,205.382	30,497.643	103,604.631	104,236.403
Priority Mail	271.724	286.588	287.397	360.163	1,205.872	1,217.641
Express Mail	15.028	16.609	16.584	21.256	69.477	69.876
Mailgrams	0.916	1.117	0.910	0.918	3.862	3.858
PERIODICAL MAIL						
Within County	204.033	209.614	207.459	268.496	889.602	892.821
Nonprofit	513.883	492.361	516.843	583.175	2,106.261	2,118.588
Classroom	12.558	14.976	16.046	14.749	58.329	58.452
Regular Rate	1,650.840	1,628.054	1,808.521	2,198.921	7,286.335	7,327.818
TOTAL PERIODICAL MAIL	2,381.314	2,345.004	2,548.869	3,065.341	10,340.528	10,397.679
STANDARD A MAIL						
Regular Rate Bulk	18,770.756	16,103.895	17,300.683	21,560.965	73,736.299	74,364.831
Regular	10,135.793	8,943.212	9,945.187	12,296.522	41,320.715	41,673.597
-- Nonautomated	1,724.349	1,274.186	1,470.704	1,685.610	6,154.848	6,159.499
(Basic Letters)	312.007	243.757	276.409	311.220	1,143.393	1,138.462
(Basic Nonletters)	245.883	215.758	239.093	293.958	994.691	1,002.310
(Presort Letters)	704.496	412.810	513.086	540.077	2,170.469	2,161.341
(Presort Nonletters)	461.963	401.861	442.115	540.355	1,846.294	1,857.385
-- Automated	8,411.445	7,669.026	8,474.483	10,610.913	35,165.867	35,514.097
(Basic Letters)	948.357	866.461	958.715	1,212.424	3,985.958	4,034.944
(Basic Flats)	91.926	81.729	91.691	114.078	379.424	383.497
(3-Digit Letters)	3,186.213	2,930.673	3,207.461	3,910.755	13,235.103	13,370.252
(5-Digit Letters)	1,347.924	1,286.789	1,428.347	1,929.298	5,992.358	6,049.339
(3/5-Digit Flats)	2,837.026	2,503.373	2,788.269	3,444.357	11,573.025	11,676.064
Enhanced Carrier-Route	8,634.962	7,160.683	7,355.496	9,264.443	32,415.584	32,691.235
-- Automated	487.977	402.684	413.639	520.990	1,825.290	1,840.231
-- Nonautomated	8,146.985	6,757.999	6,941.856	8,743.453	30,590.294	30,851.004
(Basic Letters)	1,464.024	1,206.360	1,239.180	1,560.780	5,470.344	5,514.601
(Basic Nonletters)	3,097.812	2,567.447	2,637.297	3,321.746	11,624.302	11,722.722
(High-Density Letters)	104.888	87.694	90.080	113.458	396.120	399.698
(High-Density Nonletters)	375.877	312.280	320.776	404.025	1,412.957	1,425.142
(Saturation Letters)	720.516	602.694	619.091	779.761	2,722.061	2,746.733
(Saturation Nonletters)	2,383.868	1,981.524	2,035.433	2,563.683	8,964.509	9,042.108

R2000-1 Before-Rates Volume Forecast

	2000Q1	2000Q2	2000Q3	2000Q4	2000PFY	2000GFY
Nonprofit Rate Bulk	3,771.248	3,111.712	3,281.644	3,897.926	14,062.530	14,212.747
Nonprofit	2,977.265	2,459.710	2,599.535	3,094.120	11,130.629	11,255.435
– Nonautomated	841.163	706.516	717.245	841.982	3,106.906	3,121.680
(Basic Letters)	243.962	196.606	202.858	235.766	879.191	883.187
(Basic Nonletters)	60.885	51.003	52.810	61.194	225.892	227.752
(Presort Letters)	431.924	376.943	380.762	454.839	1,644.469	1,652.879
(Presort Nonletters)	104.393	81.965	80.814	90.183	357.355	357.863
– Automated	2,136.102	1,753.194	1,882.290	2,252.138	8,023.723	8,133.755
(Basic Letters)	391.938	328.624	352.241	425.055	1,497.858	1,520.490
(Basic Flats)	21.268	16.854	18.904	24.182	81.208	82.786
(3-Digit Letters)	897.466	734.109	775.422	956.710	3,363.707	3,402.351
(5-Digit Letters)	522.197	418.783	460.628	512.732	1,914.340	1,944.967
(3/5-Digit Flats)	303.233	254.825	275.094	333.458	1,166.610	1,183.161
Nonprofit ECR	793.984	652.002	682.109	803.806	2,931.901	2,957.311
– Automated	93.560	76.608	80.145	94.444	344.757	347.679
– Nonautomated	700.424	575.394	601.964	709.362	2,587.144	2,609.632
(Basic Letters)	196.706	161.273	168.720	198.822	725.521	731.732
(Basic Nonletters)	247.182	203.027	212.402	250.297	912.908	920.834
(High-Density Letters)	14.614	12.028	12.583	14.828	54.053	54.529
(High-Density Nonletters)	2.509	2.062	2.157	2.542	9.270	9.350
(Saturation Letters)	156.689	129.000	134.957	159.035	579.682	584.804
(Saturation Nonletters)	82.724	68.004	71.145	83.838	305.711	308.382
TOTAL STANDARD A MAIL	22,542.004	19,215.607	20,582.326	25,458.891	87,798.829	88,577.578
STANDARD B MAIL						
Parcel Post	90.958	87.393	76.229	89.080	343.659	347.342
(Inter-BMC)	15.517	14.357	12.054	13.552	55.479	55.499
(Intra-BMC)	8.662	8.015	6.729	7.565	30.972	30.983
(Destination Entry)	66.779	65.021	57.446	67.963	257.208	260.860
Bound Printed Matter	135.258	112.729	90.155	164.938	503.080	509.795
Special Rate	54.880	47.029	46.440	56.758	205.107	206.675
Library Rate	7.234	6.300	6.992	7.796	28.322	28.546
TOTAL STANDARD B MAIL	288.330	253.452	219.815	318.572	1,080.168	1,092.357
Postal Penalty	94.581	80.635	81.817	101.561	358.594	359.429
Free-for-the-Blind	13.630	11.213	12.832	16.822	54.497	54.952
TOTAL DOMESTIC MAIL	49,413.446	47,305.913	47,955.932	59,841.167	204,516.458	206,009.773
SPECIAL SERVICES						
Registry	3.002	3.057	2.979	3.635	12.673	12.675
Insurance	10.877	12.779	9.387	13.626	46.669	46.688
Certified	69.383	55.379	73.392	80.031	278.185	281.365
Collect-on-Delivery	0.967	0.864	0.899	1.064	3.794	3.805
Return Receipts	57.290	50.224	61.616	66.646	235.777	238.467
Money Orders	50.679	51.292	54.876	71.244	228.091	229.668
TOTAL SPECIAL SERVICES	192.197	173.595	203.151	236.246	805.189	812.667

R2000-1 Before-Rates Volume Forecast

	2001Q1	2001Q2	2001Q3	2001Q4	2001PFY	2001GFY
FIRST-CLASS MAIL						
First-Class Letters & Flats	22,752.295	24,431.528	23,409.435	29,536.109	100,129.368	100,261.726
-- Single-Piece	12,134.073	13,136.089	12,545.592	15,386.389	53,202.142	53,213.828
-- Workshared	10,618.223	11,295.440	10,863.844	14,149.720	46,927.226	47,047.898
(Nonautomated Presort)	722.453	723.981	660.722	847.907	2,955.062	2,930.521
(Automated)	9,895.770	10,571.459	10,203.121	13,301.813	43,972.163	44,117.377
(Basic Letters)	1,255.201	1,333.789	1,293.991	1,687.689	5,570.671	5,587.538
(Basic Flats)	11.623	12.430	12.024	15.708	51.786	51.973
(3-Digit Letters)	5,447.749	5,827.608	5,634.150	7,362.538	24,272.045	24,358.882
(5-Digit Letters)	2,776.234	2,952.035	2,837.022	3,689.730	12,255.021	12,283.788
(3/5-Digit Flats)	67.893	72.360	69.248	89.212	298.713	299.532
(Carrier-Route Letters)	337.070	373.237	356.686	456.936	1,523.928	1,535.664
First-Class Cards	1,405.861	1,242.509	1,273.954	1,645.138	5,567.463	5,584.931
Stamped Cards	115.354	97.322	106.645	125.260	444.581	445.823
Private Cards	1,290.507	1,145.187	1,167.309	1,519.878	5,122.882	5,139.108
-- Single-Piece Cards	612.504	539.421	545.539	704.887	2,402.352	2,405.027
-- Workshared Cards	678.003	605.766	621.770	814.991	2,720.531	2,734.081
(Nonautomated Presort Card)	112.886	87.917	92.156	110.960	403.919	400.483
(Automated Cards)	565.117	517.849	529.614	704.031	2,316.611	2,333.598
(Basic)	130.509	113.343	130.855	174.645	549.352	554.484
(3-Digit)	235.385	215.020	217.588	285.592	953.585	959.003
(5-Digit)	168.243	153.990	150.997	201.938	675.168	678.794
(Carrier-Route)	30.980	35.496	30.173	41.857	138.506	141.317
TOTAL FIRST-CLASS MAIL	24,158.157	25,674.037	24,683.390	31,181.247	105,696.831	105,846.657
Priority Mail	293.441	319.182	316.372	395.234	1,324.229	1,331.105
Express Mail	15.250	17.173	17.073	21.995	71.491	71.641
Mailgrams	0.821	0.912	0.815	0.811	3.359	3.340
PERIODICAL MAIL						
Within County	198.529	197.735	207.175	268.837	872.276	872.194
Nonprofit	516.397	484.033	517.969	577.133	2,095.531	2,095.809
Classroom	11.924	14.741	15.127	14.520	56.313	56.415
Regular Rate	1,666.229	1,708.774	1,814.784	2,218.150	7,407.938	7,410.104
TOTAL PERIODICAL MAIL	2,393.080	2,405.283	2,555.054	3,078.640	10,432.056	10,434.523
STANDARD A MAIL						
Regular Rate Bulk	19,554.698	16,097.901	17,968.314	22,447.587	76,068.500	76,414.291
Regular	10,611.470	8,951.224	10,271.277	12,770.097	42,604.069	42,783.773
-- Nonautomated	1,590.257	1,107.976	1,326.673	1,519.987	5,544.893	5,520.725
(Basic Letters)	265.333	199.781	233.522	266.404	965.039	956.832
(Basic Nonletters)	253.767	212.937	243.523	301.093	1,011.321	1,014.669
(Presort Letters)	606.897	307.117	406.961	406.292	1,727.266	1,703.055
(Presort Nonletters)	464.260	388.141	442.667	546.198	1,841.266	1,846.169
-- Automated	9,021.213	7,843.248	8,944.605	11,250.110	37,059.176	37,263.048
(Basic Letters)	1,054.861	912.024	1,042.677	1,316.650	4,326.211	4,356.933
(Basic Flats)	99.630	84.586	97.856	122.339	404.411	406.981
(3-Digit Letters)	3,429.773	3,007.686	3,399.774	4,170.771	14,008.005	14,090.741
(5-Digit Letters)	1,450.213	1,321.871	1,513.719	2,052.430	6,338.232	6,373.435
(3/5-Digit Flats)	2,986.736	2,517.082	2,890.579	3,587.921	11,982.318	12,034.958
Enhanced Carrier-Route	8,943.228	7,146.677	7,697.036	9,677.489	33,464.431	33,630.517
-- Automated	502.926	401.896	432.846	544.217	1,881.886	1,891.225
-- Nonautomated	8,440.302	6,744.781	7,264.191	9,133.272	31,582.545	31,739.292
(Basic Letters)	1,506.665	1,204.000	1,296.719	1,630.366	5,637.751	5,665.732
(Basic Nonletters)	3,206.575	2,562.425	2,759.756	3,469.843	11,998.598	12,058.148
(High-Density Letters)	109.524	87.523	94.263	118.517	409.826	411.860
(High-Density Nonletters)	390.017	311.669	335.670	422.038	1,459.395	1,466.638
(Saturation Letters)	752.725	601.515	647.837	814.526	2,816.603	2,830.582
(Saturation Nonletters)	2,474.795	1,977.649	2,129.946	2,677.982	9,260.371	9,306.331

R2000-1 Before-Rates Volume Forecast

	2001Q1	2001Q2	2001Q3	2001Q4	2001PFY	2001GFY
Nonprofit Rate Bulk	4,021.684	3,154.834	3,260.340	3,985.399	14,422.256	14,418.001
Nonprofit	3,199.105	2,514.664	2,604.100	3,189.604	11,507.474	11,510.795
– Nonautomated	824.302	662.220	658.195	796.699	2,941.416	2,923.601
(Basic Letters)	237.948	182.595	184.556	220.683	825.782	820.349
(Basic Nonletters)	62.735	50.112	50.751	60.378	223.976	223.335
(Presort Letters)	426.465	356.480	351.673	433.056	1,567.673	1,558.776
(Presort Nonletters)	97.154	73.032	71.216	82.583	323.985	321.141
– Automated	2,374.803	1,852.444	1,945.905	2,392.906	8,566.058	8,587.194
(Basic Letters)	445.219	354.513	371.664	460.719	1,632.115	1,638.302
(Basic Flats)	25.519	19.255	21.086	27.631	93.490	94.221
(3-Digit Letters)	968.308	753.327	779.568	989.479	3,490.682	3,492.506
(5-Digit Letters)	595.023	454.151	488.365	561.060	2,098.600	2,107.728
(3/5-Digit Flats)	340.734	271.198	285.223	354.016	1,251.171	1,254.437
Nonprofit ECR	822.579	640.170	656.239	795.795	2,914.782	2,907.206
– Automated	96.650	75.218	77.106	93.503	342.476	341.586
– Nonautomated	725.929	564.952	579.134	702.292	2,572.306	2,565.620
(Basic Letters)	203.465	158.346	162.321	196.840	720.973	719.099
(Basic Nonletters)	256.143	199.343	204.346	247.803	907.635	905.275
(High-Density Letters)	15.174	11.809	12.106	14.680	53.770	53.630
(High-Density Nonletters)	2.601	2.024	2.075	2.516	9.217	9.193
(Saturation Letters)	162.749	126.659	129.839	157.450	576.697	575.198
(Saturation Nonletters)	85.796	66.770	68.446	83.002	304.015	303.225
TOTAL STANDARD A MAIL	23,576.382	19,252.735	21,228.653	26,432.986	90,490.756	90,832.291
STANDARD B MAIL						
Parcel Post	97.228	93.645	85.196	99.310	375.379	378.447
(Inter-BMC)	14.223	13.167	11.509	12.884	51.783	51.620
(Intra-BMC)	7.940	7.351	6.425	7.192	28.908	28.817
(Destination Entry)	75.064	73.127	67.262	79.234	294.688	298.009
Bound Printed Matter	149.393	125.754	97.251	169.061	541.459	541.976
Special Rate	56.127	47.221	47.280	57.526	208.154	208.687
Library Rate	7.464	6.350	7.094	8.000	28.908	29.009
TOTAL STANDARD B MAIL	310.212	272.970	236.821	333.897	1,153.900	1,158.118
Postal Penalty	89.476	104.101	70.291	88.697	352.566	348.543
Free-for-the-Blind	14.193	11.137	13.493	17.661	56.485	56.675
TOTAL DOMESTIC MAIL	50,851.012	48,057.531	49,121.963	61,551.167	209,581.673	210,082.894
SPECIAL SERVICES						
Registry	2.743	2.721	2.759	3.387	11.610	11.563
Insurance	9.991	13.194	9.122	13.447	45.754	45.610
Certified	75.607	58.506	76.886	83.149	294.149	295.742
Collect-on-Delivery	0.922	0.820	0.849	0.996	3.587	3.576
Return Receipts	62.679	53.412	65.195	69.909	251.196	252.559
Money Orders	52.329	52.816	56.358	73.131	234.633	234.993
TOTAL SPECIAL SERVICES	204.270	181.469	211.169	244.019	840.928	844.043

R2000-1 After-Rates Volume Forecast

	2001Q1	2001Q2	2001Q3	2001Q4	2001PFY	2001GFY
FIRST-CLASS MAIL						
First-Class Letters & Flats	22,747.774	24,362.118	23,300.623	29,354.112	99,764.628	99,857.394
-- Single-Piece	12,105.597	13,054.215	12,454.372	15,274.584	52,888.768	52,877.658
-- Workshared	10,642.177	11,307.904	10,846.251	14,079.528	46,875.860	46,979.736
(Nonautomated Presort)	661.033	640.741	582.945	745.710	2,630.430	2,586.288
(Automated)	9,981.143	10,667.163	10,263.307	13,333.818	44,245.431	44,393.448
(Basic Letters)	1,265.878	1,345.634	1,301.194	1,690.944	5,603.649	5,620.726
(Basic Flats)	11.734	12.550	12.092	15.731	52.106	52.293
(3-Digit Letters)	5,494.791	5,880.124	5,666.711	7,378.557	24,420.184	24,508.201
(5-Digit Letters)	2,799.704	2,978.560	2,854.234	3,700.227	12,332.726	12,362.727
(3/5-Digit Flats)	68.980	73.641	70.395	90.691	303.708	304.691
(Carrier-Route Letters)	340.057	376.653	358.680	457.668	1,533.058	1,544.810
First-Class Cards	1,390.701	1,212.451	1,243.011	1,591.141	5,437.303	5,440.951
Stamped Cards	109.507	90.809	99.508	116.877	416.702	415.873
Private Cards	1,281.193	1,121.642	1,143.503	1,474.263	5,020.601	5,025.078
-- Single-Piece Cards	608.341	528.978	535.060	684.950	2,357.329	2,354.910
-- Workshared Cards	672.852	592.664	608.442	789.313	2,663.272	2,670.168
(Nonautomated Presort Card)	110.477	84.331	88.438	105.308	388.553	383.715
(Automated Cards)	562.376	508.334	520.004	684.005	2,274.719	2,286.453
(Basic)	130.668	112.272	129.605	171.271	543.816	548.060
(3-Digit)	234.200	211.119	213.586	277.498	936.403	939.713
(5-Digit)	166.792	150.302	147.345	194.811	659.250	661.035
(Carrier-Route)	30.716	34.641	29.468	40.425	135.250	137.645
TOTAL FIRST-CLASS MAIL	24,138.475	25,574.570	24,543.634	30,945.253	105,201.931	105,298.345
Priority Mail	287.624	301.155	287.057	354.573	1,230.409	1,228.754
Express Mail	15.299	17.286	17.318	22.479	72.382	72.628
Mailgrams	0.821	0.912	0.815	0.811	3.359	3.340
PERIODICAL MAIL						
Within County	196.800	195.442	204.772	265.720	862.734	862.061
Nonprofit	510.678	476.658	505.880	562.170	2,055.385	2,052.208
Classroom	11.924	14.658	14.726	13.841	55.150	55.089
Regular Rate	1,666.225	1,707.317	1,801.938	2,182.167	7,357.647	7,351.808
TOTAL PERIODICAL MAIL	2,385.627	2,394.075	2,527.315	3,023.898	10,330.916	10,321.166
STANDARD A MAIL						
Regular Rate Bulk	19,293.256	15,612.675	17,306.856	21,502.486	73,715.272	73,826.867
Regular	10,421.716	8,580.460	9,786.760	12,167.900	40,956.836	40,998.656
-- Nonautomated	1,561.949	1,064.416	1,269.085	1,450.506	5,345.955	5,304.047
(Basic Letters)	278.493	211.355	246.640	280.434	1,016.922	1,011.823
(Basic Nonletters)	261.158	219.398	250.246	309.432	1,040.235	1,045.493
(Presort Letters)	561.795	256.470	345.007	334.205	1,497.478	1,455.143
(Presort Nonletters)	460.502	377.192	427.192	526.435	1,791.320	1,791.588
-- Automated	8,859.767	7,516.044	8,517.675	10,717.394	35,610.881	35,694.609
(Basic Letters)	1,022.831	862.932	980.455	1,240.687	4,106.906	4,120.244
(Basic Flats)	89.145	72.186	83.357	104.344	349.032	347.480
(3-Digit Letters)	3,360.895	2,872.376	3,226.606	3,956.368	13,416.245	13,450.018
(5-Digit Letters)	1,471.991	1,324.157	1,508.170	2,040.299	6,344.618	6,378.638
(3/5-Digit Flats)	2,914.906	2,384.392	2,719.087	3,375.695	11,394.080	11,398.229
Enhanced Carrier-Route	8,871.540	7,032.215	7,520.096	9,334.586	32,758.436	32,828.211
-- Automated	499.434	396.301	424.181	527.383	1,847.298	1,851.903
-- Nonautomated	8,372.106	6,635.915	7,095.915	8,807.203	30,911.138	30,976.309
(Basic Letters)	1,487.256	1,173.090	1,248.999	1,538.060	5,447.405	5,449.490
(Basic Nonletters)	3,183.176	2,524.949	2,701.731	3,357.141	11,766.997	11,794.849
(High-Density Letters)	107.834	84.837	90.122	110.522	393.315	393.108
(High-Density Nonletters)	391.118	313.451	338.444	427.467	1,470.481	1,479.259
(Saturation Letters)	740.214	581.664	617.251	755.524	2,694.652	2,692.107
(Saturation Nonletters)	2,462.509	1,957.924	2,099.367	2,618.488	9,138.287	9,167.496

R2000-1 After-Rates Volume Forecast

	2001Q1	2001Q2	2001Q3	2001Q4	2001PFY	2001GFY
Nonprofit Rate Bulk	3,995.977	3,127.457	3,230.287	3,940.382	14,294.103	14,277.455
Nonprofit	3,183.729	2,498.167	2,585.847	3,162.150	11,429.892	11,425.579
– Nonautomated	849.700	688.499	684.633	827.731	3,050.563	3,040.715
(Basic Letters)	261.902	207.757	210.113	251.684	931.456	933.904
(Basic Nonletters)	64.508	51.949	52.698	62.867	232.022	232.032
(Presort Letters)	424.451	354.172	349.264	429.415	1,557.301	1,547.506
(Presort Nonletters)	98.840	74.621	72.558	83.765	329.784	327.272
– Automated	2,334.028	1,809.668	1,901.214	2,334.419	8,379.329	8,384.865
(Basic Letters)	420.456	328.464	345.038	428.019	1,521.977	1,519.777
(Basic Flats)	23.978	17.673	19.415	25.559	86.625	86.820
(3-Digit Letters)	962.763	747.423	773.103	979.402	3,462.690	3,461.809
(5-Digit Letters)	590.943	449.901	483.519	554.244	2,078.608	2,085.641
(3/5-Digit Flats)	335.889	266.207	280.139	347.194	1,229.428	1,230.817
Nonprofit ECR	812.249	629.290	644.440	778.232	2,864.211	2,851.875
– Automated	95.921	74.444	76.266	92.253	338.884	337.655
– Nonautomated	716.327	554.847	568.174	685.979	2,525.327	2,514.220
(Basic Letters)	200.939	155.683	159.433	192.541	708.597	705.557
(Basic Nonletters)	252.756	195.777	200.479	242.047	891.059	887.140
(High-Density Letters)	14.953	11.577	11.853	14.305	52.688	52.446
(High-Density Nonletters)	2.584	2.006	2.056	2.487	9.133	9.102
(Saturation Letters)	160.149	123.933	126.882	153.049	564.013	561.323
(Saturation Nonletters)	84.946	65.871	67.471	81.550	299.837	298.653
TOTAL STANDARD A MAIL	23,289.233	18,740.132	20,537.143	25,442.867	88,009.376	88,104.322
STANDARD B MAIL						
Parcel Post	96.607	92.507	84.110	98.120	371.345	374.096
(Inter-BMC)	13.519	12.150	10.576	11.839	48.085	47.638
(Intra-BMC)	7.482	6.697	5.826	6.522	26.527	26.254
(Destination Entry)	75.606	73.660	67.707	79.759	296.732	300.204
Bound Printed Matter	149.386	124.167	93.708	159.378	526.640	524.743
Special Rate	55.545	46.566	46.624	56.728	205.463	205.789
Library Rate	7.391	6.240	6.961	7.796	28.387	28.432
TOTAL STANDARD B MAIL	308.929	269.481	231.403	322.022	1,131.835	1,133.060
Postal Penalty	89.476	104.101	70.291	88.697	352.566	348.543
Free-for-the-Blind	14.193	11.137	13.493	17.661	56.485	56.675
TOTAL DOMESTIC MAIL	50,529.677	47,412.849	48,228.470	60,218.262	206,389.257	206,566.832
SPECIAL SERVICES						
Registry	2.634	2.581	2.618	3.213	11.046	10.966
Insurance	9.975	13.059	8.906	12.972	44.911	44.680
Certified	73.600	55.157	71.980	74.900	275.638	274.934
Collect-on-Delivery	0.919	0.816	0.843	0.981	3.559	3.544
Return Receipts	57.649	46.999	57.065	59.434	221.146	220.088
Money Orders	51.327	51.151	54.467	69.811	226.757	226.435
TOTAL SPECIAL SERVICES	196.104	169.764	195.879	221.311	783.057	780.646